IOCH
Immunization and Other Child Health Project

Results of Coverage Evaluation Survey of Routine EPI and
August OPV+ TT (NNT) Campaign
Chittagong, Khulna and Rajshahi City Corporation Slums
September 2000

Survey Report No. 17

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Table of Contents

List of Tables

List of Charts

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
MSH	Management Sciences for Health
NGO	Non Governmental Organization
NID	National Immunization Day
OPV	Oral Polio Vaccine
THC	Thana Health Complex
TT	Tetanus Toxoid
WHO	World Health Organization

Terminology

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

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

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

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

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

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

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

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

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

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

Executive Summary

Background

EPI project conducted 2nd round of the NNT campaign in urban slums of 4 city corporations and 27 municipalities, high risk and hard to reach areas in 544 unions under 181 Upazilas between August 6 and August 16, 2000 to provide a dose of TT vaccine to all eligible women of 15-49 years of age and to provide a dose of OPV to children of 0-59 months of age. IOCH/MSH Project conducted a NNT coverage evaluation survey in Chittagong, Khulna and Rajshahi City Corporation among slum dwellers from September 10-24, 2000. The objectives of the survey were as follows:

Objectives

The principal objectives of the survey were:

a) to assess the levels of routine immunization coverage of children (12-23 months) and to find out the reasons for non-immunization and partial immunization

b) to assess the levels of TT immunization coverage in women of child bearing age (15-49 years) regardless of their marital status; and to find out the reasons for non-immunization and partial immunization

c) to assess the coverage levels of OPV and TT vaccine during the 2nd round of NNT campaign conducted in August'2000 and find out the reasons for non-immunization.

Coverage levels for the Routine Immunization of Children

Access: 89% of the children received at least one dose of antigen (DPT 1st dose in this case) from routine immunization sessions based on crude data (card plus history). However 11% of the children did not receive any immunization.

Crude coverage between 12-23 months: 88% children received BCG, 72% received three doses of OPV, 72% received three doses of DPT and 57% received measles vaccine.

Valid coverage between 12-23 months: 88% children received BCG, 62% received three doses of OPV, 62% received three doses of DPT and 55% received measles vaccine.

Valid coverage by 12 months: 88% children received BCG, 61% received three doses of OPV, 61% received three doses of DPT and 47% received measles vaccine.

Source of immunization: Childhood immunization is provided by EPI Outreach centers in 72% of the cases. EPI vaccination centers are within half-an-hour walking distance from client's residence in 96% of the cases.

Reasons for non-immunization and partial immunization of children: The main reasons for non-immunization and partial immunization were the lack of knowledge of the parents/caretakers about the importance of immunization and in particular the need to return for the subsequent doses. Sickness of the child or their mother also found to be an important reason for low immunization coverage.

Problems detected: although access to immunization was fairly high, there was a very high drop out rate (19% from DPT1 to DPT3 and 36% from DPT1 to measles vaccine) and a number of invalid doses due to early immunization (4% for DPT1 and 3% for measles vaccine). A small percentage of uncorrected missed opportunities occurred at immunization sessions (range 0% to 2% for different antigens). Childhood immunization cards were available in only 41% of the cases and were lost in another 47% of the cases.

Coverage levels for the Routine TT immunization of women

74% of the women of childbearing age (15-49 years) had received a first dose of TT. Only 25% of the women had received the five doses of TT vaccine. 26% of the women had not received any immunization.

Reasons for non-immunization and partial immunization of women: The major reasons cited for non-immunization were that the women were unaware of the need for TT immunization and fear of taking injections. Whereas the major reasons for partial immunization were that they were either unaware of the need for subsequent doses of TT vaccine or the health worker did not specify the date to return for the next dose of TT vaccine.

Coverage levels for the NNT Campaign

Among slum populations of Chittagong, Khulna and Rajshahi city corporations, OPV coverage was 72% among eligible children and only 11% of the eligible women received a dose of TT vaccine. The most important reason for non-immunization during the NIDs was that the parents of children or the eligible women were not aware of the campaign.

Information and motivation activity

Apparently parents are more conscious and motivated for vaccination of their children. But, knowledge and motivation to take TT vaccine is very poor. GOB or municipal Health worker was found to be most important source of information for routine immunization. Relatives and neighbors play an important role too. Surprisingly this is true for NNT campaign as well. Miking was found to be effective in dissemination of information for NNT campaign. Conventional approaches for mass communication like Radio, Television, Posters, Newspapers, volunteers have found to be little effective in this particular situation.

Suggested solutions

This survey indicates a need for appropriate information being given to parents/caretakers in an effective way about the importance of each child being fully immunized (preferably before 12 months of age) and about how to achieve full immunization (the time and place of immunization sessions and the number of doses required). Women of childbearing age require more education about how to prevent neonatal tetanus with 5 doses of TT vaccination. Screening of all women (15-49 years of age) by vaccinators for eligibility for TT vaccination during any contact at the immunization session should be strongly emphasized. Vaccinators should utilize the opportunity to vaccinate any woman coming to the EPI sessions for any purpose to complete TT 5 dose schedule. There is also a need for training to be given to the service providers to help them keep up to date with EPI policies and guidelines and increase their capacity for counseling parents about EPI.

Information and motivation activities need to be geared up. Operations research is necessary a) to find out reasons why conventional mass media campaigns are found to be ineffective among slum populations, b) to try new interventions in terms of communication and motivation to reach these hard core group living in slums and c) to suggest solutions - how mass media could be effectively utilized to supplement the role played by the health workers during campaign activities.

Introduction

National EPI program conducted 2nd round of the NNT campaign in urban slums of 4 city corporations and 27 municipalities, high risk and hard to reach areas in 544 unions under 181 Upazilas between August 6 and August 16, 2000 to provide a dose of TT vaccine to all eligible women of 15-49 years of age and to provide a dose of OPV to children of 0-59 months of age. First round of NNT campaign was conducted in September 1999. Objective of the 2nd round of NNT campaign was to increase TT vaccine coverage among women of 15-49 years of age and eventually reduce the incidence of Neo-natal Tetanus. OPV was given during 2nd round of NNT campaign in an aim to reduce the wild poliovirus transmission in the high-risk areas where 29 patients were identified with wild poliovirus in 1999. This campaign was also aimed to achieve higher OPV coverage in hard to reach areas where routine immunization coverage is usually low.

The routine EPI program in the City Corporations 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 doses of immunization provided are supposed to be reported to the City Corporation Health authority either at the end of each immunization session (if it is provided by City Corporation staff) or on a monthly basis. After compilation, the data is submitted to the concerned Civil Surgeon's office that aggregates it with other Upazila EPI results within that district and sends it on to the EPI HQ in Dhaka.

For many reasons (e.g. immunization provided to children older than the target age group, tendency for over reporting, underestimated target etc.) routine EPI coverage data is generally unreliable[5,7,8]. There are also clear indications that the health situation in most of the urban areas are worse than in the rural areas[5,7,8,10,11], particularly among populations living in slums.

IOCH therefore decided to carry out a survey based on the WHO recommended EPI 30 cluster survey method[1] to obtain data on the status of the immunization coverage of the children and women living in slum areas of Chittagong, Khulna and Rajshahi City Corporations as well as OPV and TT vaccine coverage of achieved during 2nd round of NNT campaign. Slums in Chittagong, Khulna and Rajshahi City Corporations were taken as a unit and 30 clusters were chosen through random sampling method (please see map).

Objectives

The overall objective of the survey was to assess the level of NNT campaign and routine immunization coverage among slum dwellers living in Chittagong, Khulna and Rajshahi City Corporations. The specific objectives were:

a) to assess the levels of routine immunization coverage of children (12-23 months) and to find out the reasons for non-immunization and partial immunization

b) to assess the levels of TT immunization coverage in women of child bearing age (15-49 years) regardless of their marital status; and to find out the reasons for non-immunization and partial immunization

c) to assess the coverage levels of OPV and TT vaccine during the 2nd round of NNT campaign conducted in August'2000 and find out the reasons for non-immunization.

d) to understand better the socioeconomic and demographic profile and health care seeking behavior of the families with zero dose children (findings of this part of the survey will be described in separate report, and as such not included in this report).

Methodology and its Limitations

The survey followed the WHO recommended 30-cluster survey method[1], which has been widely used in many developing countries to assess immunization coverage. It is relatively simple and can be done at low cost. (The detailed survey methodology and its limitations are presented in **Annex A**). Briefly, the immunization information is collected on a randomly selected group of 210 children/women from 30 clusters (7 children/women per cluster) in a given community. It gives an estimate of immunization coverage to within +/- 10 percentage points of the true population proportion with 95% statistical confidence, assuming a design effect of 2.

In this survey 7 children between 12-23 months (children born between September 10, 1998 and September 9, 1999) were selected from each cluster to ascertain their routine vaccination status. **Annex B** describes how the dates of eligibility of different antigens in routine immunization were determined for children. The second round of NNT campaign was conducted between August 6-16, 2000 in urban slums and other hard to reach and high risk areas. Children born between August 6, 1995 and August 5, 2000 were selected for collecting information on NNT child vaccination status. 7 children of this age group were chosen from each cluster to evaluate OPV immunization status achieved during NNT campaign. Seven women between 15-49 years of age, irrespective of their marital status were selected to ascertain their tetanus toxoid vaccination status for routine immunization and another 7 women of same age group were interviewed for TT immunization status achieved during NNT campaign.

The 30 clusters (slums) were chosen randomly by IOCH from a list of the populations of slums in Chittagong, Khulna and Rajshahi City Corporations. The list of selected clusters is given in **Annex C** and their location is shown on the following map. The WHO standard questionnaire was used in this survey for documenting the routine immunization status of children and women. Separate questionnaires were used for collecting the data of NNT campaign.

Data was collected by IOCH monitoring team. Data collection period was from September 10-24, 2000. Data entry and analysis was done by IOCH using COSAS 4.41[3], "EPI Info" and SPSS programs. The final report was prepared by the Monitoring and Evaluation Unit, IOCH/MSH Project.

Limitations of the 30-cluster survey method

Although the 30-cluster survey method is relatively simple, it has several limitations[2] that can be grouped into two types:

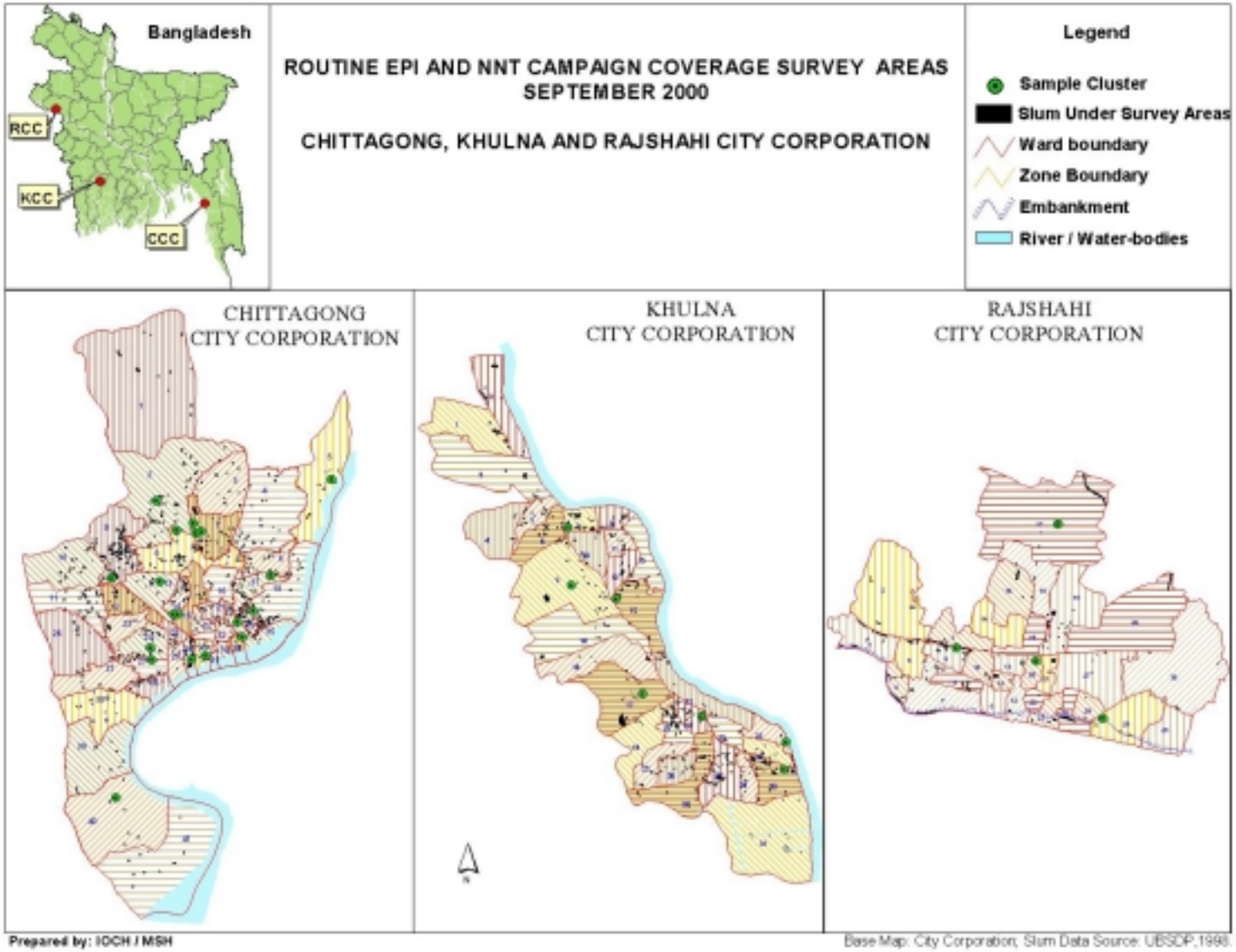
Linked to the sampling method:

- As an inherent bias in the sampling technique in 30 clusters, bigger slums are more likely to be selected as a cluster. The survey leaves out scattered small slums with poor access to services. It also does not reflect the lack of uniformity in service availability or the behavior of particular populations.
- There is a wide confidence interval (+/- 10%). It means that if the result shows 47% of children received a valid dose of measles before 12 months of age, then the "true" figure of measles immunization of children could be anywhere between (47-10) = 37% and (47+10) = 57%. This type of survey is useful when the coverage is low but is less relevant to assess higher coverage or to compare surveys – unless there is a big difference between two surveys.
- To be relevant the analysis of valid data must apply to a relatively high percentage of available cards.

Linked to the implementation:

- The selection of the index house is key. Too often the proper method is not followed because the surveyors do not make the effort to number all the houses from their location to the end of the slums along the direction indicated by the bottle or by the pencil.
- If a household includes an eligible child who is not at home for a few hours, the surveyor often does not return later on but skips the house and substitutes another child. This is, of course, an incorrect procedure that introduces a bias.

It is also important to remember that this survey coverage data gives little information about the current program as it documents the activities of a year earlier.


Bangladesh
RCC
KCC
CCC
ROUTINE EPI AND NNT CAMPAIGN COVERAGE SURVEY AREAS
SEPTEMBER 2000
CHITTAGONG, KHULNA AND RAJSHAHI CITY CORPORATION
Legend
Sample Cluster
Slum Under Survey Areas
Ward boundary
Zone Boundary
Embankment
River / Water-bodies
CHITTAGONG
CITY CORPORATION
KHULNA
CITY CORPORATION
RAJSHAHI
CITY CORPORATION
Prepared by: IOCH / MSH
Base Map: City Corporation; Slum Data Source: UBSDP,1998.

Results

General information

210 children were surveyed. 54% of them were boys and 46% were girls. 20% of the infants were away of their home for more than 2 months in their first six months of life. 76% of them live in a building or tin shade house. Survey finding shows that 96% of the immunization centers are within half an hour walking distance of the children's home. Only 1% of the immunization center was more than half an hour walking distance. 3% of the respondents could not answer correctly about the distance of immunization session. 3 children had abscess within two weeks after vaccination. In two of the cases it was in the arm and in one case it was in the thigh. Parents walk to the immunization centers with their children in 76% of the cases and use rickshaw in 23% of the cases. 1% of the respondents said that they used baby taxi to go to the immunization session.

210 women were surveyed. 3% of the women interviewed were unmarried at the time of survey. 22% of the women were away from their home for more than 2 months at one time within last two years. 75% of the women live in a building or tin shade house. Immunization centers were within half an hour distance in 99% of the cases. Immunization centers were within half an hour to one hour distance in 1% of the cases. 56% of the women surveyed were illiterate, 24% went to primary school, 5% went to adult literacy class and the remaining others have post primary education. 90% of the women surveyed were housewife, 4% were garment's worker, 3% engaged in small trading and the rest of the other women were engaged in various other trades and professions.

A. <u>Routine immunization coverage of children</u>

Coverage levels (card plus history data of COSAS analysis)

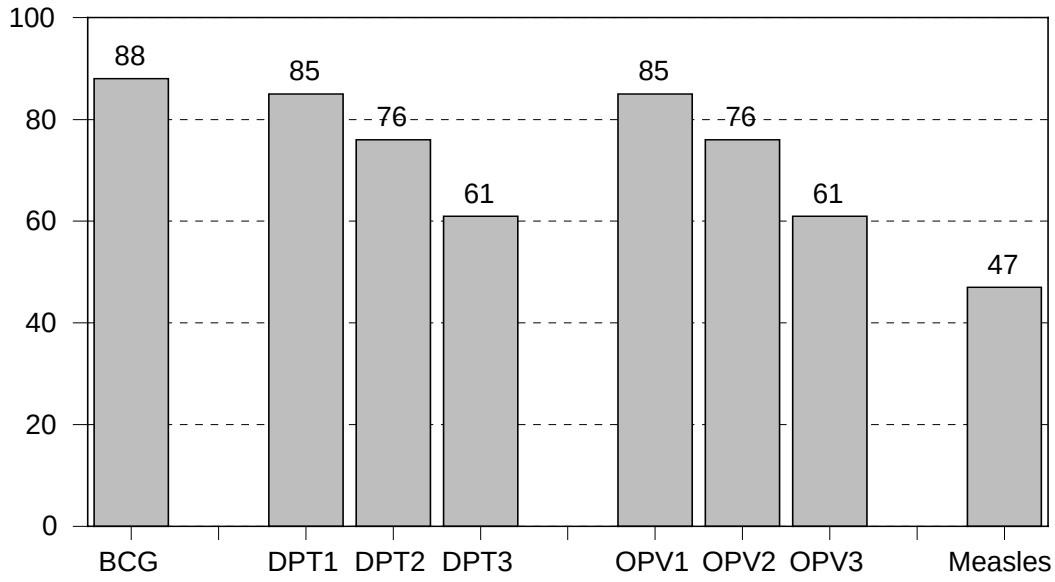
Table 1 shows the coverage levels of children between 12-23 months of age and their vaccination status at 12 months of age. The crude data figures for the 12-23 months age group indicates that 72% of the children received three doses of OPV, 72% received three doses of DPT and 57% were vaccinated against measles. The valid coverage levels are however considerably lower for DPT/OPV 2nd and 3rd doses. 62% of the children received three doses of OPV, 62% received three doses of DPT and 55% were vaccinated against measles. 11% of the children surveyed had not been immunized at all and were therefore not reached by the routine EPI program.

Table 1: Routine immunization coverage levels of the children

	Coverage % Immunization of 12-23 months age group		Coverage % Immunized by 12 months Valid data
	Crude data (Access)	Valid data	
BCG	88%	88%	88%
Polio 1	89%	86%	85%
Polio 2	81%	76%	76%
Polio 3	72%	62%	61%
DPT 1	89%	86%	85%
DPT 2	81%	76%	76%
DPT 3	72%	62%	61%
Measles	57%	55%	47%
Fully immunized	56%	46%	38%
Zero dose	11%	-	-

Table 1 shows little or no difference between valid data of immunization by 23 months of age group and the valid data by 12 months except for measles coverage (55% versus 47%). **Chart 1** shows the actual coverage for children of less than 12 months. Proportion of fully immunized children under one year of age (valid data) among immunization card holder's were 45%.

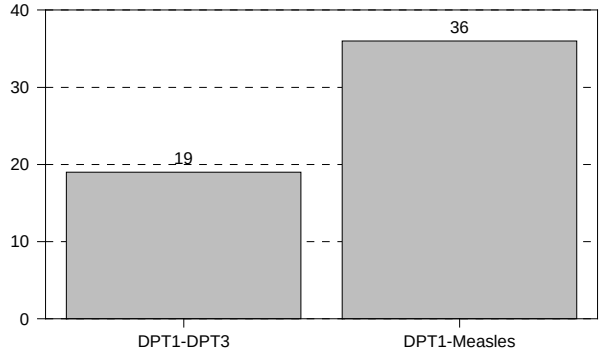
Chart 1: Immunization coverage among children less than 12 months old



Program access (percent of children surveyed who received DPT 1st dose, crude data by card or history)
Access to immunization was very good. 89% of the children received a 1st dose of DPT.

Program continuity (dropout rate)
Crude data for antigens received by 12-23 months of age is used for calculating the dropout rate. In this survey, the DPT1 to DPT3 dropout rate was 19% and DPT1 to measles dropout rate was 36% (**Chart 2**).

Chart 2: Dropout rates for childhood immunization



Program quality
Adherence to immunization schedule-invalid doses
Adherence to immunization schedule is generally considered to be the major indicator of program quality. The data indicates that the providers performances related to program quality were fairly satisfactory. The number of invalid doses[4] was very low for different antigens. 4% of the children received an invalid dose of DPT1 and 3% received an invalid dose of measles vaccine. 1% of the children received a DPT second dose less than 4 weeks after the first dose of DPT and another 2% of the children received a DPT third dose less than 4 weeks after the second dose of DPT.

BCG vaccination
88% of the children surveyed received BCG vaccine based on card plus history data. 82% of the children were found with a BCG scar, but in 7% of the cases BCG vaccination did not produce a visible scar.

Missed opportunities for immunization
Uncorrected missed opportunities for immunization were very low (range 0% for DPT/OPV3 and 2% for measles vaccine). This is a good side of the program.

Availability of documentation of immunization
Child immunization cards were available in 41% of the cases and were lost in another 47% cases.

Reasons for non-immunization and partial immunization of the children

The reasons cited by parents for non-immunization and partial immunization are shown in **table 2**. 11% of the children were not immunized. More than half of the parents of the non-immunized children were unaware of the need for immunization. The rest of the respondents answered various other reasons. 33% of the children were partially immunized. Inaccurate or inadequate knowledge of the need for next due dose, date of vaccination of DPT/OPV and measles vaccine was cited by parents in 41% of the cases for partial immunization. Sickness of the child was stated in another 14% of the cases.

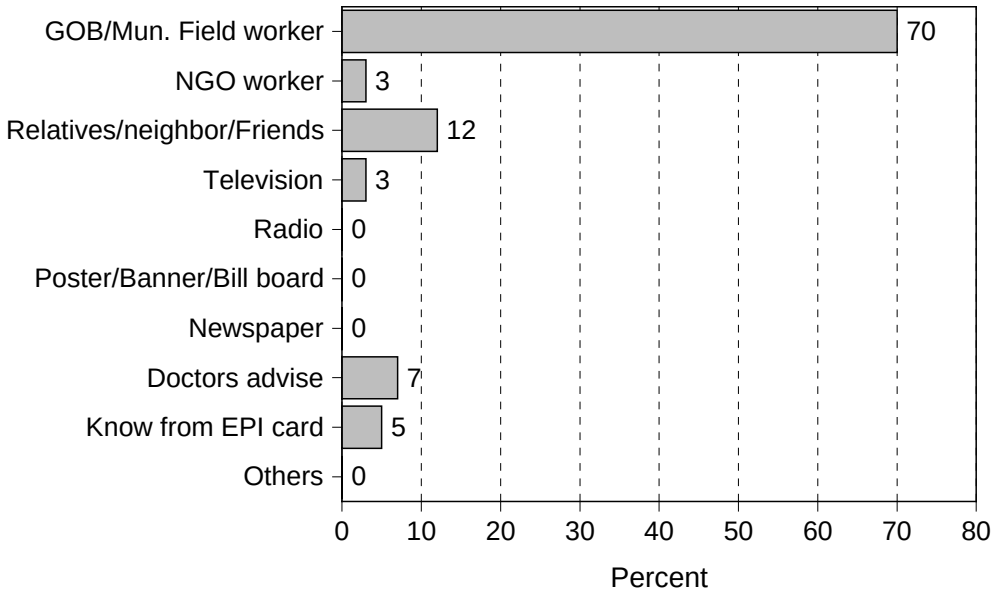
Table 2: Reasons for non-immunization and partial immunization of the children

Reasons	Not immunized	Partially immunized
Did not know about the need to vaccinate the child	52%	-
Parents did not know the importance of taking subsequent due doses	-	14%
Parents do not know when to go for second or third dose of DPT/OPV	-	10%
Parents did not know the importance of taking measles vaccine	-	14%
Parents did not know when to go for measles vaccine	-	3%
Place or time of immunization not known	4%	4%
Fear of side reactions	-	1%
Parents thinking to give vaccine in future	-	3%
No faith in immunization	-	1%
Mother was too busy	4%	3%
Immunization center is too far	9%	-
Vaccinator was absent	-	4%
Vaccinator did not behaved well	4%	3%
Family problem/sickness of mother	-	3%
Child was sick, not taken to immunization session	9%	14%
Child was sick, taken to session - but immunization was not given	8%	6%
Child feel pain after injection	9%	3%
Child was not at home	-	9%
Vaccinator will come home to give vaccine	-	1%
Other reasons	-	3%

Information and motivation for routine childhood immunization

33% of the respondents could mention correctly the number of times a child should be taken to immunization session ("4 times" - was taken as correct answer), 36% gave wrong answer and 31% of the respondents could not answer. 68% of the respondents could mention the correct age of completing childhood vaccination ("9-12 months" - was taken as correct answer). 30% could not answer and only 2% gave wrong answer. **Chart 3** shows that those who answered right or wrong, knew it in majority of the cases from the Government or municipal health workers (70%). Relatives, neighbor and friends were the source of information in 12% of the cases.

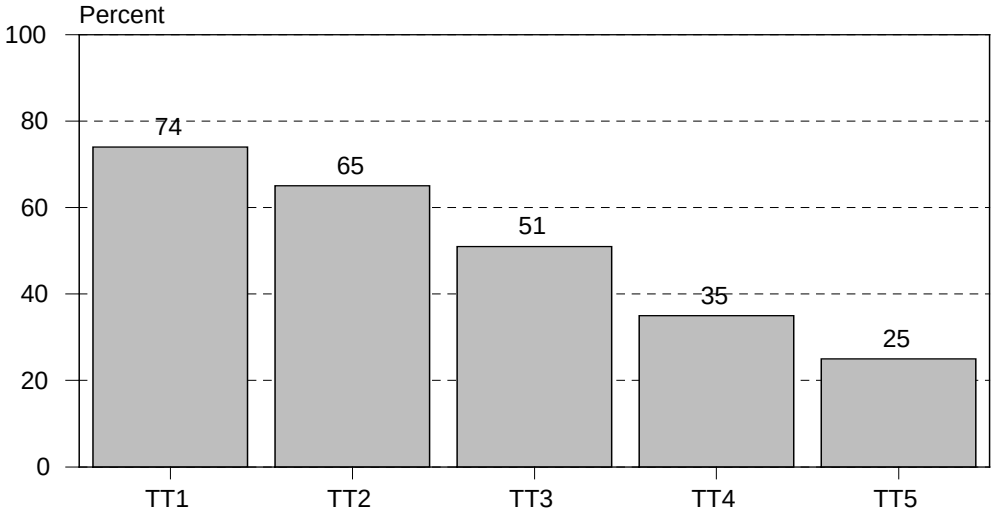
Chart 3: Source of information and motivation for routine childhood immunization



B. Routine TT immunization coverage levels of the women

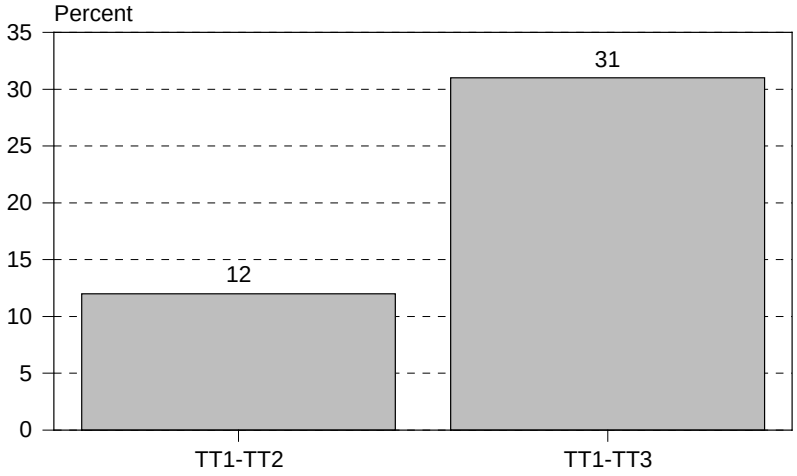
74% of the women had access to a first dose of TT vaccine (based on crude data). 65% of the women received two or more doses of TT vaccine. Only 25% had received all the required five doses (**Chart 4**). 26% of the women surveyed had not received any dose of TT vaccine.

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



The dropout rate from first dose of TT vaccine to second dose of TT vaccine was 12% and the dropout rate from the first dose of TT vaccine to third dose of TT vaccine was 31% (**Chart 5**). Survey finding indicates that none of the women missed an opportunity for a first dose of TT vaccine during their antenatal check-ups. Only 18% of the women had TT immunization cards and they were lost in another 48% cases.

Chart 5: Dropout rates for TT immunization



Reasons for non-immunization and partial immunization of the women

26% of the women were not immunized and 49% were partially immunized. **Table 3** indicates that the major reasons cited for non-immunization of women were: a) unaware of need for immunization (50%) and b) fear of taking injections (24%). Whereas the reasons for partial immunizations were: a) unaware of need for subsequent doses of TT immunization (56%) and b) health worker did not specify the date to return for next dose (14%).

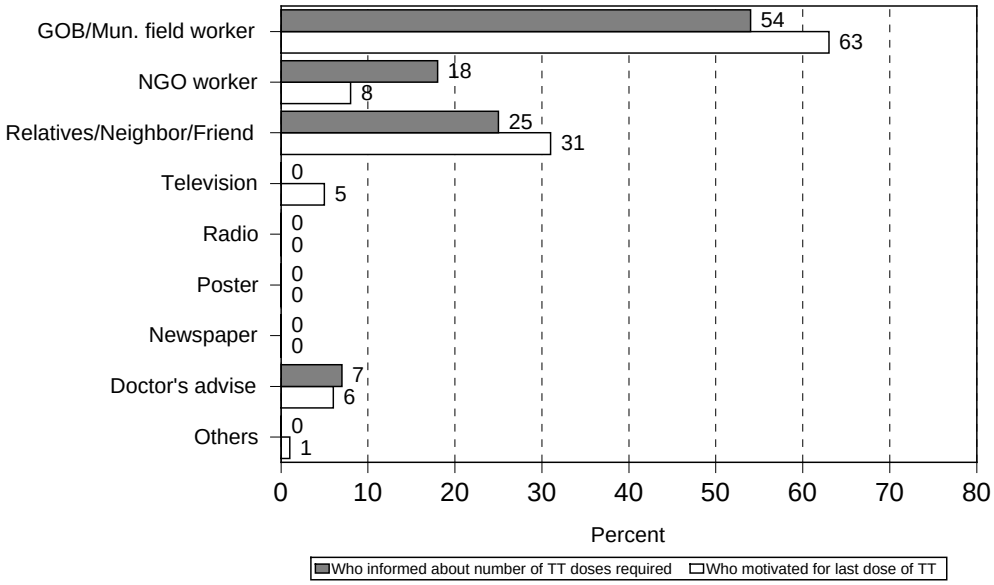
Table 3: Reasons for non-immunization and partial immunization for TT of the women

Reasons	Not immunized	Partially immunized
Unaware of need for immunization	50%	1%
Health worker did not specify the date to return for next dose	-	14%
According to health worker 3 doses of TT is enough	-	7%
Unaware of the need for subsequent doses	-	56%
Fear of side effects	2%	1%
"In our times TT vaccination was not in practice"	11%	-
Fear of taking injections	24%	1%
Rumors	2%	-
Place of immunization too far	2%	-
Time of immunization inconvenient	-	1%
Too busy with household works	3%	2%
Family problem	2%	-
Woman was sick, could not go to immunization session	-	2%
Cultural / religious reasons	4%	-
Next dose is not yet due	-	16%

Information and motivation for routine TT immunization

Only 7% of the women could mention correctly the number of doses of TT vaccine a woman should for life long protection. 6% gave a wrong answer and 87% of the women could not answer. **Chart 6** shows that those who answered right or wrong, knew it in majority of the cases from the Government or municipal health workers (54%). Relatives, neighbor and friends were the source of information in 25% of the cases. Another question was asked, who motivated you to take the last dose of TT you took? **Chart 6** shows that majority of them (63%) said that Government or municipal health workers motivated them. Relatives, neighbors and friends motivated them in 31% of the cases.

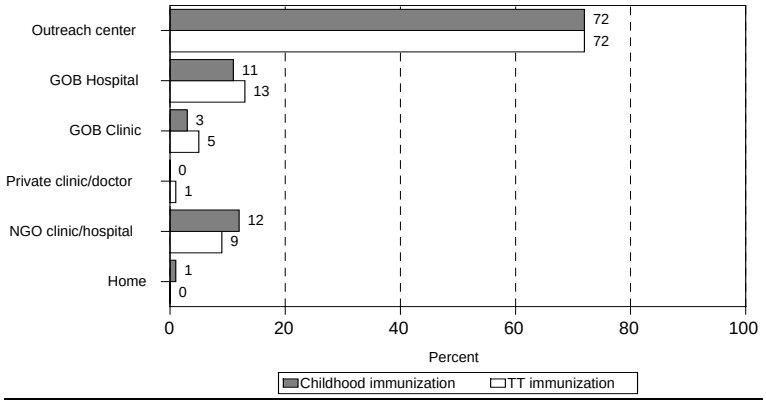
Chart 6: Source of information and motivation for routine TT immunization (multiple responses were accepted)



Providers of routine childhood and TT immunization

Chart 7 shows that childhood immunization was provided from EPI outreach centers in 72% of the cases, 11% from GOB Hospitals and 12% from NGO clinics and hospitals. Provider's of routine TT immunization is almost the same as of childhood immunization.

Chart 7: Providers of routine childhood and TT immunization



C. Coverage levels of NNT campaign

OPV immunization during NNT campaign

72% of the children received OPV during NNT campaign conducted between August 6 and 16, 2000. Almost all of them were vaccinated in the immunization centers. Only 1% children were vaccinated by house visit. NNT immunization centers were within 10 minutes walking distance in 89% of the cases and 8% centers were over 10 minutes walking distance. 3% of the respondents could not answer about the distance of NNT centers. In 99% of the cases parents took their children to the NNT centers by walking and only in 1% of the cases they used rickshaw.

TT immunization during NNT campaign

Only 11% of the eligible women were vaccinated with a dose of TT vaccine during NNT campaign. NNT immunization centers were within 10 minutes walking distance in 84% of the cases and 12% centers were over 10 minutes walking distance. 4% of the respondents could not answer about the distance of NNT centers. In 98% of the cases women went to the NNT centers by walking and only in 2% of the cases they used rickshaw.

Reasons for not receiving OPV and TT vaccine during NNT campaign

28% children and 89% of the eligible women were not vaccinated with a dose of OPV and TT respectively during NNT campaign. **Chart 8 and 9** shows along with other reasons that among those non-vaccinated children 72% were not vaccinated as their parents were not aware of the NNT campaign, and 66% of the non-vaccinated women were not vaccinated as they were not aware of it.

Chart 8: Reasons for not receiving OPV during NNT campaign

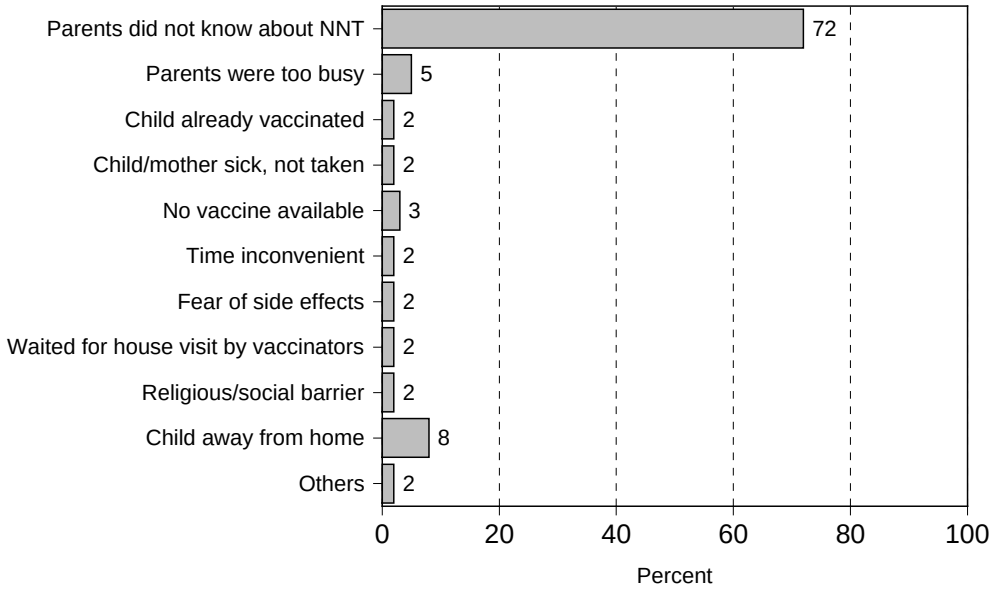
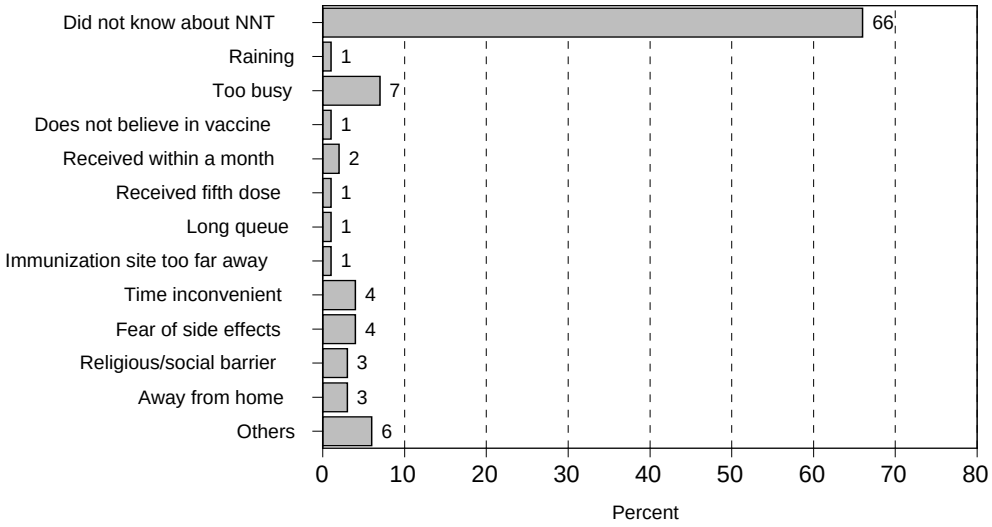


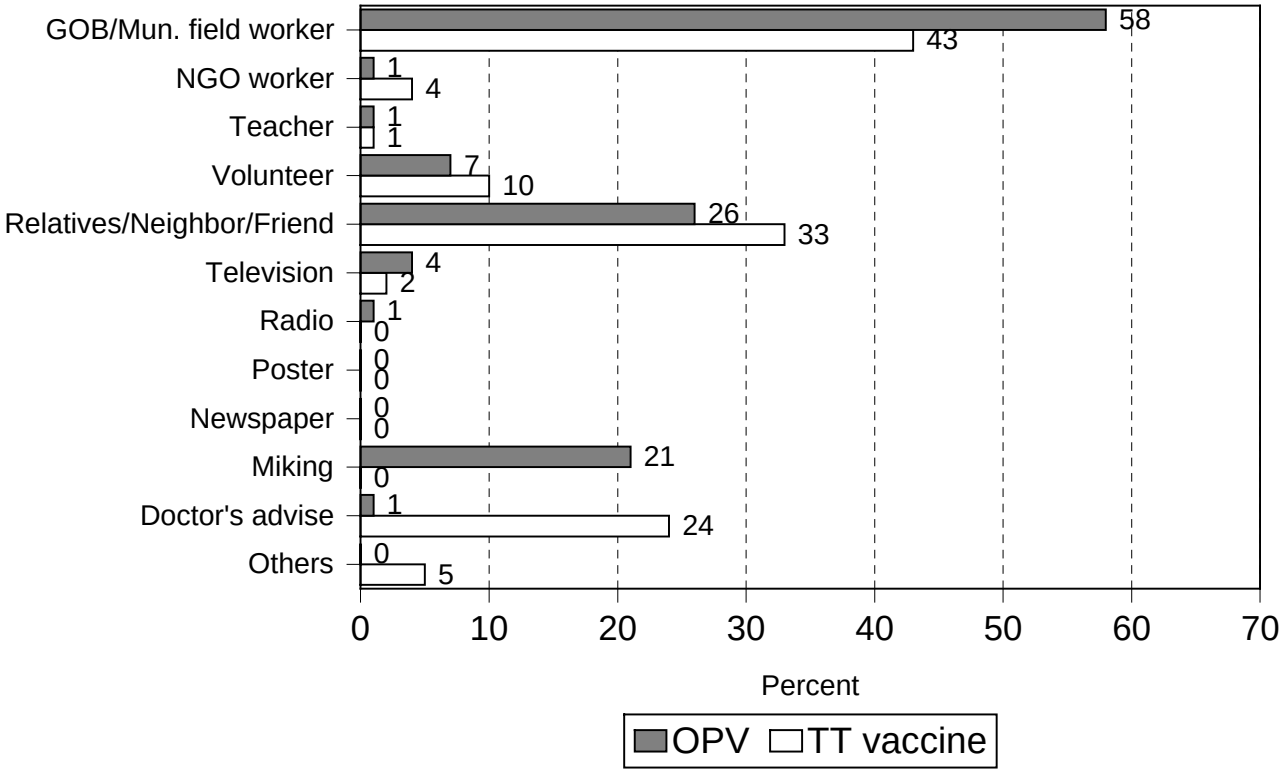
Chart 9: Reasons for not receiving TT vaccine during NNT campaign



Source of information for NNT campaign

Chart 10 shows that the most important source of information for NNT campaign was Government or Municipal field workers house visit. Relatives, neighbors and friends are important source of information too. Miking was found to be useful among mass media. Doctors advise is also found to be useful in taking TT immunization.

Chart 10: Source of information for NNT campaign
(Multiple responses were accepted)



Discussion

The survey showed that 89% of the children of 12-23 months of age had access to routine immunization. But the promising start was eroded by high drop out rate (e.g. 19% from DPT1 to DPT3 and 36% from DPT1 to measles vaccine) and by a small percentage of invalid doses (4% for DPT1 and 3% for measles vaccine). 11% of the children had not been immunized at all. Child immunization cards were available in only 41% of the cases and were lost in another 47% of the cases. 74% of the women had their first dose of TT vaccine, but only 25% of the eligible women had all the required five doses of TT vaccine. 26% of the women had not received any TT vaccine. 18% of the women had TT immunization cards and another 48% women had lost their cards. The absence of cards has got serious implications as it may mean that when a child comes to the immunization session for the second or subsequent doses, the vaccinators will have to immunize without accurately knowing the date of birth of the child and the date of previous immunization. This is another factor likely to increase the number of invalid doses given. This is also true for TT immunization where there is often a long interval between doses.

72% of the eligible children were vaccinated with a dose of OPV during NNT campaign. Only 11% of the eligible women received a dose of TT vaccine during the same campaign. Unaware of the campaign was stated by the respondents in majority of the cases for non-immunization during NNT campaign.

Information and motivation level for routine immunization for the slum population is not satisfactory. This is a serious issue for routine TT immunization where 87% of the women did not know how many doses of TT a women should take to protect her lifelong from Tetanus. For childhood immunization information and motivation level is little bit better. Government and municipal health workers, relatives and neighbors were found to be the main source of information for routine immunization for this particular group of population surveyed.

Conclusions and Recommendations

Coverage levels for routine immunization of children

Access to routine immunization and low full immunization

This survey found that the access to routine immunization for children in slums of Chittagong, Khulna and Rajshahi City Corporations was very good with 89% of the children receiving a first dose of DPT, but this percentage was not maintained for subsequent immunizations. This important shortcoming can be mainly attributed to the lack of knowledge on the importance of full immunization leading to high drop out rates and also but to a least extent to the number of invalid doses and uncorrected missed opportunities.

The dropout rates

The high drop out rates could be reduced to acceptable levels[5,6,9] by:

- providing better counseling to parents/caretakers about the importance of each child receiving all the required antigens before 12 months. They also require advise about when and where they should take their child for the next dose. Most children will need to attend 4 immunization sessions. 41% of the children dropped out simply because their parents/caretakers did not know the importance of taking subsequent doses or the dates for taking those doses of vaccine.
- undertaking appropriate Behavior Change Communication (BCC) activities through the mass media and service providers to increase awareness of the need for children to receive all the doses of each of the antigens.
- providing refresher training and orientation to the service providers for counseling parents. It is apparent from the results of the survey that they lack the relevant technical skills and/or motivation for counseling. 4% of the parents reported that the vaccinators did not behaved well with them.

Children not being immunized

11% of the children were not immunized at all. The main reason was that the parents were unaware of the need for immunization (52%) and sickness of the child or their mother. This situation may be improved by:

- undertaking appropriate BCC activities to reach this still un-reached population and to increase the awareness of the parents for the need for their children to be vaccinated. Parents should be informed that minor sickness is not a contraindication for vaccination.

Coverage levels for TT vaccination

Access to TT vaccine (TT1) was fairly good but the rate of drop out after the second dose was very high. The coverage of 74% for TT1 reduced to 25% for TT5 and 26% had not been immunized at all. A woman of reproductive age needs to receive 5 doses of TT at appropriate intervals to acquire immunity for rest of her reproductive life. TT coverage is likely to be improved by:

- checking the TT status of all women between 15-49 years at antenatal check ups and at routine child immunization sessions to see whether the mother or female caretaker is eligible for any dose of TT and provide a dose of TT if it is required
- undertaking appropriate BCC activities to increase awareness of the women of childbearing age of the need for 5 doses of TT vaccinations
- providing refresher training to the service providers of the TT vaccination requirements.

Coverage levels for NNT campaign

72% of the children received a dose of OPV but only 11% of the eligible women received a dose of TT. Most important reason for low coverage was lack of awareness of the campaign. Improvements might be made by:

- providing appropriate BCC activities to inform parents/caretakers of the campaign and make them aware of the importance of vaccination for their children and women of child bearing age.

Reference and Resource materials

1. WHO EPI Mid Level Managers module: Evaluate Vaccination Coverage (WHO/EPI/MLM/91.11)

2. Anthony G Turner, Robert J Magnani and Muhammad Shuaib, "A not quick as quick but much cleaner alternative to the Expanded Programme on Immunization (EPI) cluster survey design", International Journal of Epidemiology, 1996, volume 25, Issue No. 1, pages 198-203.

3. COSAS 4.3 version manual, WHO, November 1991.

4. Training manual on EPI for the field workers of Ministry of Health and Family Planning, 4th edition, 1997.

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7. Progotir Pathey, October 1998, UNICEF, Dhaka.

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10. Unpublished data of immunization coverage: UPHC Project survey among urban poor group living in cities, 1999.

11. Mitra and associates: UFHP NGO impact assessment survey, 1998.

Annex - A

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

The standard EPI Cluster Survey Design

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

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

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

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

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

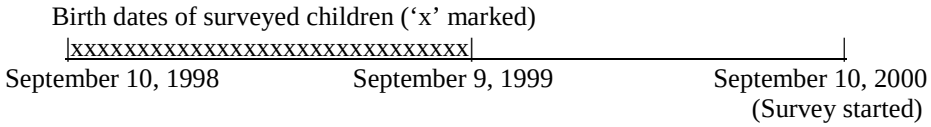
"A second problem concern sampling weights. …….. However, since measures of size in sampling frames are often inaccurate due to census errors and changes in population since the census was taken, application of the standard EPI Cluster Survey method does not automatically result in a self weighting sample.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

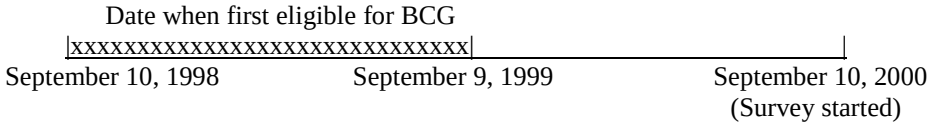
"Thirdly, a computer simulation study demonstrates that the EPI Cluster Survey based upon quota sampling at the second stage of sample selection is considerably more prone to sampling bias than conventional cluster sampling, particularly where immunized children are 'pocketed' within clusters. "

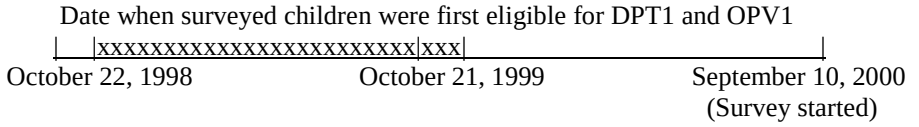
"Finally, there is the issue of how second stage sample selection should proceed in surveys with multiple measurement objectives."

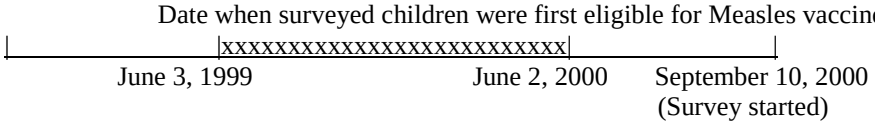
Annex B

The following illustration describes when children surveyed first became eligible for different vaccines:









Annex C

NNT coverage survey in the slums of Chittagong, Khulna and Rajshahi City Corporations
List of clusters identified for survey
Total population of all slums in three City Corporations: 639773

Cluster	City Corp.	Ward	Slum name	Slum address	Pop.
1	Chittagong	2	Hossain Shajahan O Babul	Bayjid Bostami Abasik Elaka (Barma Colony) Jalabab	82
2		5	Abir Sowdagar-er Colony	Nutun Bazar Colony Road	82
3		7	Bama Bastohara Colony	Paschim Sholo Shohor Chittagong	5799
4		7	Shanti Nagar Colony	Paschim Sholo Shohor Chittagong	19110
5		7	Amin Colony	Paschim Sholo Shohor Chittagong	16380
6		8	Amenar Mar Colony	Rubi Ghate Nasirabad Shilpa Ekala Sulok Bahar Chittagong	202
7		9	Habib-er Colony	Dulalbad Uttar Pahartoli Chittagong	186
8		13	Sadar Bahadur Nagar Camp	Paschim Pahartali Doublemooring thana Chittagong	4936
9		14	Moti Jhoma Colony (Dhakin)	Moti Jhoma Lal Khan Bazar Chittagong	10920
10		14	Tankir Pahar Colony	Moti Jhoma Lal Khan Bazar Chittagong	5460
11		17	Younus Companir Colony	KB Aman Ali Riad Numagar Paschim Bakulia	87
12		19	Abdul Nuru O Abdul Sobhan-er Colony	Abul Khayer Road Tulatul Bridge Miah khan Nagar	1392
13		20	Zafor Sawdagar O Khumat Ali Colony	12 Bahear Deghir Par(west)	164
14		24	Mehar Ullah Colony	Daiya para Monsurabad Agrabad ctg	93
15		27	Nurul Amin Colony	Agrabad Bapari para Bazar Chittagong	87
16		29	Rail way Bastohara Colony	Paschim Mather Bari	2457
17		30	Mosammat Sakhiuna Begum-er bari	32 Darogar Hat By lane Purba Mader bari	180
18		34	Harun Nasir Bulbuli Amin O others	Kala Bagan Asadgoang Chittagong	246
19		40	Barma Colony	Purba Hossain Ahamed para Uttar Potenga	863
20	Khulna	7	Rail-er Bastee (Dhakin pash)	Khalish pur Shilpa Kabar Khana gate theka Kashipur Graveya	394
21		9	Bastohara colony	KDA Moha Sarak Khulna	6564
22		15	Rail Line Bastee-2	Rail Line purba Pash puraton Jessore Road to Gabtala Khulna	1050
23		17	Akkel Fokir-er Bari	Sonadanga Boira Cross Road-1, Khulna	465
24		20	Lutfor-er bari	Shekh Para, Main Road, Shekh para, Khulna	197
25		22	Satter Bormo golir Bastee	Satter Bormo goli, Khulna	656
26		30	Sobhan Bewa, Delowar, Hakim-er Basti	Motia Khali Sangalna, Chan mari Press Road Khulna	208
27	Rajshahi	6		TB Hosp. Rail Linerdhar Daskinpara	2218
28		17		Talpukur	411
29		20		Sericulture Karkhana area	796
30		28		Char Kazla Badurtola	4256

Acknowledgements

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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

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