

REPORT

Third Party Evaluation
of
Expanded Programme on Immunization
Punjab

The Consultants Consortium
SoSec KEMC

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EXECUTIVE SUMMARY

The Expanded Program on Immunization (EPI) of Pakistan was one of the most successful programs in the developing countries in early 80s but its coverage decreased with the withdrawal of international support in mid 90s. Presently program is working hard to achieve the objectives: to reduce morbidity and mortality resulting from the six EPI target diseases. Despite various interventions and significant inputs from donors, the results have not been encouraging and there is continuous low coverage. To improve the coverage, Government of Punjab, Health Department, organized Crash Program from July 1999 to October 1999. It was decided that evaluation of the EPI program should be entrusted an independent, credible Third Party Evaluation (TPE) to avoid any bias factor. The objective of the Third Party Evaluation was initially focused to the crash program but later as the process of designing the study was refined, it was decided that the evaluation would be done for the EPI program as a whole and not specifically the crash program. The study objectives were to determine the extent to which the objectives of EPI Crash Program were met satisfactorily through a Third Party Evaluation, assess the efficiency and effectiveness of the Health Department in terms of mobilization and utilization of resource, and identify factors that contributed towards the success and the shortcomings and draw lessons for future intervention.

Study was conducted to evaluate the district-wise coverage of the province and to evaluation of the EPI Program in terms of its design – sufficiency, elaborateness, and effectiveness. The **quantitative survey** was designed according to the World Health Organizations (WHO) standard for EPI Evaluations i.e., **30 Cluster-Sampling Technique**. Planning of the survey was done both at macro and micro level. Punjab was divided in to four regions namely, **Bahawalpur, Faisalabad, Lahore, and Rawalpindi**; with each region having 8-9 districts. A comprehensive district based Regional Survey plan was drawn for trainings of the supervisors and the interview teams as well as other field survey activities. A total of 387 interviewers and 43 Field Supervisors were hired for this project. Four medical colleges collaborated in this project: Rawalpindi Medical College, Rawalpindi, Punjab Medical College, Faisalabad, King Edwards Medical College, Lahore and Quaid-i-Azam Medical College, Bahawalpur. The whole survey was completed in **Five Days** throughout Punjab, except in Faisalabad region where survey was completed in seven days. **Qualitative part** included the structured interviews with the policy makers, senior & midlevel managers, service providers and community opinion leaders.

Immunization coverage of children by cards and history in Vehari was(95%) and Multan (92%) and the lowest was in Rajan Pur (28.9%) although the overall completed vaccination coverage in Punjab was 70%. The vaccination coverage, on confirmation from the dates (with caeds) was poor in Rajan Pur (5.7%) and the highest in Vehari and Bhakkar, (60% and more). Rest of the districts showed a coverage lower than 60% for all the antigens. 68% of the children were fully vaccinated, 26.8% were partially vaccinated while only 5.4% of the children remained unvaccinated on the whole. The highest proportion of fully vaccinated children was reported from Vehari (94.9%) and Multan (91.2%); partially vaccinated children were highest in Rajan Pur (48.3%) followed by Faisalabad (45%), Muzaffargarh and Bahawalpur (44%). Twenty-seven percent of the children remained unvaccinated in Rajan Pur, followed by Okara and Layyah (10%).

Vaccination Coverage of Mothers for first 2 doses of TT in Khushab was (76%), Lahore urban (84%) and Sialkot (82%). These districts showed the highest coverage. Seventeen out of the rest of the 32 districts showed a coverage of more than fifty percent. On the whole, the coverage with two doses of TT came up to 63%. However, the coverage for three doses came down to 18% and for fourth and fifth dose it came as low as 5% for all the districts. The coverage for TT1 and TT5 ranges from 69% to 5% .

National Immunization Days (Sub National Immunization Days (NID/SNIDs): The coverage in Punjab in the first round was 98% (7233 out of 7372) while 92.3% had their second dose of OPV alongwith Vitamin A. In the districts, Rajan Pur, Layyah and Attock SNID coverage reported for 2nd dose with Vitamin A was the lowest (81-84%).

The coverage during the Crash program was assessed by immunization cards (n= 3450). The number of children vaccinated with BCG was 789. Out of this, 627 (79.5) benefited by the crash program for BCG vaccination when we considered their age at vaccination at least one month outside the recommended age for BCG vaccination. For OPV first dose, out of 899 children, 574 (63.8%) of the children were immunized giving a margin of one month after the due age of vaccination i.e., 2 months. For OPV third dose, out of 1175 children who missed their third dose, 741 (63%) benefited. For DPT first and third doses, nearly 64% of the children were vaccinated outside the routine immunization. For measles, 41.6% (381 out of 916) of the children vaccinated during this 'crash' period were those who had missed their opportunity in routine. Thus crash program seems to have covered a large number of 'missed opportunities' and had increased the proportion of children fully vaccinated as a whole .

A comparison is made between **Lahore Urban and Lahore Rural** clusters since Lahore was considered for both types of populations. Vaccination coverage for the childhood population for each dose of various antigens indicates that the urban population was covered more than the rural population. Ninety-six percent of the urban children were vaccinated with BCG when both cards and history was considered as compared to 87% of the rural children. Similarly, there were small differences between the three doses of Polio and DPT antigens among these children. Measles vaccination however, showed a larger difference between the two populations of 83 and 64% respectively. When 'fully vaccinated' children were considered, the difference was larger i.e., of 81 and 60% respectively. When maternal vaccination was compared among the two groups of mothers, larger differences were found between first and the second doses of Tetanus vaccinations. The rural mothers were lagging behind by 28% for the first dose of TT (88% urban mothers and 60% rural mothers) While for the second dose the difference was 30% (84% urban mothers and 54% rural mothers). The differences for the 3rd to 5th doses of TT became much smaller among the urban and the rural populations.

The Consultants Consortium (**TCC**) Team of Consultants conducted structured interviews with the policy level managers and officials of the EPI program. Discussions were held with the Secretary Health, Director General Health Services, Additional Secretary Health (Technical) and Director EPI along with his provincial program team. **TCC** Teams also conducted detailed interviews with the operational staff including Divisional Directors, District Health Officers, Deputy District Health Officers, District Supervisors Vaccination (DSV), Assistant Supervisors Vaccination, Medical Officers, Vaccinators and CDC Supervisors. International donor Agencies like UNICEF, WHO and World

Bank were also visited. The objectives of these interviews were to assess the efficiency and effectiveness of the DOH in terms of mobilization and utilization of resources and to identify factors that contributed towards success and shortcomings of the Crash Program. During discussions with policy makers, operational managers and the field staff, number of issues were raised which have been grouped under various components as follows:

- A Program Resources
- B Technical Aspects
- C Program Management and Organization
- D Communication and Community Participation
- E Monitoring, Evaluation and Feedback

Recommendations

After detail discussions with health professionals, following recommendations have been forward by the team:

- ◆ Decentralization of Supplies: Distribution system for the vaccines and supplies needs to be redesigned with storage facilities at the divisional level. Decades old Cold Chain equipment at the peripheral need to be replaced.
- ◆ Deployment of Staff: There are instances of mal-deployment of vaccinators in the field. This needs correction through administrative measures Job Descriptions for all categories of staff need to be developed and implemented
- ◆ Training and Skill building: It is recommended that appropriate and focused training programs may be initiated for different categories of EPI staff and skill building through hands on training. WHO manuals need to be modified according to local needs and be used for such trainings. Trainings should have special emphasis on IPC, maternal TT and cold chain maintenance. Training of staff in AFP surveillance also needs improvement.
- ◆ Community Involvement: Civil Society may be involved in program advocacy, planning and implementation through CBOs, NGOs and community leaders. LHWs have formed Health Committees, which can play an important role in program propagation for community involvement.
- ◆ Crash Program was a successful experience it is recommended that the cadence made during Crash Program may be extended.
- ◆ NIDs/SNIDs: A general impression regarding NIDs and SNIDs, which prevailed amongst some mid-level managers is that these occasions consume significant time and resources from the routine activities thus affecting the routine coverage. However it was admitted that NIDs and SNIDs generated awareness and motivated the supervisory staff to look into the routine EPI coverage and plan accordingly. This is clearly a false impression that the routine coverage has declined because of Immunization Days. It is recommended that this pace of NIDs/SNIDs be maintained and the target of Polio free Pakistan be achieved accordingly.
- ◆ Mobility of Staff: Operational vehicles may be supplied to the supervisory and field staff while ensuring their proper use. Vaccinators have generally bicycles and each vaccinator has to look after one Union Council, most of the times it is difficult for them to cover all that area with bicycle, they may be made better mobile as is being done in one of the Tehsil in Rawalpindi division.

1. INTRODUCTION

1.1 Expanded Program for Immunization

Historic Background

The overall situation regarding the health sector in Pakistan still causes a great concern to all involved authorities. The infant mortality rate of approximately 86 per 1,000 births is comparatively high for a country with the overall state of economic development like Pakistan. Figures quoted for maternal mortality rate vary between 350 to 450 per 100,000 live births and are among the highest in the region.

The Expanded Program for Immunization (EPI) in Pakistan was launched in 1979 after Alma Ata's Declaration of "Health for All by the Year 2000". The overall *objective* of this program was to reduce morbidity and mortality resulting from the six EPI targeted diseases (polio, diphtheria, whooping cough, tetanus, measles and tuberculosis). It focused at immunization of children less than one year of age and tetanus immunization of all women of childbearing age. Public awareness and health education were major activities carried out in order to boost the immunization coverage of the target groups.

The on going EPI is an extension of the *Smallpox Eradication Program*, after Smallpox was eradicated in 1978. This remained as pilot till 1983 when the *Accelerated Health Program* (AHP) was launched, which had the following three components:

- Expanded Program on Immunization (EPI);
- Control of Diarrhea Diseases (CDD); and
- Training of Traditional Birth Attendants (TBAs).

The EPI, as part of the AHP, was a two-year's project. The Federal Government has been responsible for the procurement and supply of vaccines; cold chain equipment; syringes needles and transport. The Provincial Government was responsible for the staff expenses, training, health education, stationary, POL charges and other contingencies. UNICEF and World Health Organization (WHO) supported by supplying the vaccines, cold chain equipment and vehicles in addition to the technical assistance.

The program provided coverage against six vaccine preventable diseases to children of less than five years of age and TT immunization to pregnant mothers. Later, the upper age limit of the target group was reduced to two years followed by a final reduction to one year.

The Program in Pakistan earned an international recognition in December 1984 after its evaluation by an International Commission. This revealed the coverage exceeding 95% in children of 2-5 years and 81% in less than 2 years in Punjab.

In July 1985, upon decision by the Executive Committee of the National Economic Council (ECNEC), the EPI was integrated into the regular health services. In 1988, the donors entered into the program and this arrangement continued until 1991, when they started pulling out. The Punjab Government then planned its own inputs through a multi-donor *Second Family Health Project, Punjab*. This step was to bridge the increasing gap between the scarce resources and the maintenance of increasing coverage requirements to improve the performance of the programs.

The procurement and distribution of logistics including vaccines and syringes is still centralized and these supplies are received directly from the National Institute of Health (NIH), Islamabad. Vaccination is actually carried out by the field staff and the pivotal person is the *vaccinator*. All vaccinators are provided with Vaccine Carriers, each equipped with four ice packs.

Despite various interventions and significant inputs from donors, the EPI Program continued to perform low and there has been increasingly low vaccination coverage in the past few years. This added to the huge backlog of un-vaccinated children and women of childbearing age.

EPI Crash Program in Punjab

Government of the Punjab (GoPb) decided to initiate a ***crash program*** for the EPI from July to October 1999 to improve the EPI coverage in the province. Department of Health (GoPb) planned that the crash program should receive support from all relevant quarters of the government and with full involvement of the communities.

The objectives for the EPI Crash Program were outlined as below:

- To clear the immunization backlog;
- To achieve and maintain over 95% coverage against all EPI antigens; and
- To reduce the IMR by 9%.

The district administration was fully involved to make crash program a real success. All the divisional and district administrators were requested to support the Health Department in its operations for successful implementation of the Crash Program. The Local Government & Rural Development Department also coordinated with health department through their medical wings of District Councils and Municipalities. UNICEF and WHO contributed significantly to the campaign to makeup the deficiencies.

The Health Department made *special arrangements* for the procurement and distribution of syringes and vaccines. The Directorate General of Health Services, Punjab sent a special circular outlining the activities and ensuring that efforts would replicate at all level line offices of the Health Department. It was noticed that almost entire health machinery of the Public Sector was mobilized and the resources were dedicated to EPI Crash Program.

Special communication strategy was adopted, based on an effective IEC campaign including, launching TV spots, radio spots, radio talks, advertisements in all leading newspapers, and weekly press releases by all DHSs and DHOs. Banners and pamphlets were displayed and distributed at vaccination points. Other measures to increase the social awareness included holding walks at all levels of implementation. Similarly, inter-personal communication (IPC) strategies were also adopted at all levels, including announcements through mosques, motivation speeches in religious functions and influencing the community elders.

1.2 Third Party Evaluation

Government of Punjab, Health Department, has made substantial inputs especially in terms of human and material resources to the Crash Program. It obviously desired to determine the extent to which the objectives of this initiative have been met. It was decided that evaluation of the EPI program should be entrusted an independent, credible Third Party Evaluation (TPE) to avoid any bias factor.

The objective of the Third Party Evaluation was initially focused to the crash program but later as the process of designing the study was refined, it was decided that the evaluation would be done for the EPI program as a whole and not specifically the crash program.

Evaluation Objectives

The study objectives already outlined in TOR by Department of Health and UNICEF were to:

- Determine the extent to which the objectives of EPI Crash Program were met satisfactorily through a Third Party evaluation.
- Assess the efficiency and effectiveness of the Health Department in terms of mobilization and utilization of resource. Translation of efforts into outputs i.e. 100% coverage against vaccine preventable disease.
- Identify factors that contributed towards the success and the shortcomings/ drawbacks and draw lessons for future intervention.

The study would address a number of important questions that include:

A) The district-wise coverage against vaccine preventable disease that was achieved viz-a-viz that targeted. Sample size should be calculated in a manner that 95% confidence level is obtained.

B) Evaluation of the EPI Crash Program in terms of:

1. Its design – sufficiency, elaborateness, and as an aid to implementation;
2. Resource (manpower, logistics and supplies) estimation and supplies assurance;
3. Its adequacy and effectiveness for the provision of implementation guidelines (circulars, order, instructions);
4. The role and adequacy of supervision provided at different levels of the hierarchy of the health administration. It will be ascertained whether the performance matched that which was visualized/assigned to:

- The district including the DDHO, SMO/MO;
 - The Divisional Directorate;
 - The Provincial Directorate General of Health Services; and
 - The Provincial Secretariat of Health Services.
5. The adequacy and effectiveness of the:
- A. District micro-plan in terms of its design, implementation and as a tool for monitoring;
 - B. Logistic system, availability and how effective and efficient was the use of equipment and supplies viz. Cold chain, vaccines, syringes and needles, transport, and printed material;
 - C. Communication strategy and the arrangements brought in place (all levels from province to the grass root i.e. field worker – the Vaccinator); and
 - D. Mechanisms for involvement of communities.

2. METHODOLOGY

2.1 Introduction

There were two types of research instruments used in the Third Party Evaluation.

- A. Quantitative (Structured questionnaire for household coverage survey).
- B. Qualitative (Systems Evaluation)

With the help of these research methods, the objective of the study was achieved i.e. determine the extent to which the objectives of EPI Program were met satisfactorily and assess the efficiency & effectiveness of the Health Department in terms of mobilization and utilization of resource. This assessment study was conducted in all the districts of Punjab with the following survey design:

A. Quantitative Study Design

The survey design and sample size was designed according to the World Health Organizations (WHO) standard for EPI Evaluations. We used **30 Cluster-Sampling Technique**. This technique allows a small number of the target population to be sampled while providing data, which are statistically valid. A "cluster" is a randomly selected group, which in this case, contains at least 7 children in the age group that are required to evaluate and the mothers of at least 7 children in a specific age group to evaluate Tetanus Toxoid (TT) coverage. A coverage survey contains 30 clusters and meets the following standards of reliability:

- The results of the survey will have a level of accuracy of within plus or minus 10%. For example, if the survey shows immunization coverage of 70% in the sample, the coverage in the target population will be between 60% and 80%.
- The level of confidence is 95%, that means that nineteen out of twenty times the data, which results from the survey, will be within the stated level of accuracy (i.e., plus or minus 10%).

A survey using this cluster sampling technique only allows to draw conclusions about the population surveyed as a whole. *It does not permit comparisons among different clusters or subsections of the total population surveyed.* If you want to compare, for example, urban with rural populations, or sections of the population using one immunization strategy with other sections using a different strategy, you would have to do separate surveys in each section. As same strategy is used throughout the country it was possible to make comparison among the districts. We decided to select 30 clusters in each district so that different district could be compared with each other in terms of coverage of different vaccines.

a. Clusters Selection

In this survey design and sample size was according to the World Health Organization (WHO) standard for EPI Evaluations. Federal Bureau of Statistics (FBS) selected the clusters for this evaluation. FBS is the federal agency for keeping national data about households and individuals. Recently they had completed the National Census. It has a provincial, divisional and district set up which gives all sort of support in the field when and where required.

Thirty (30) *clusters* (sites) were randomly selected in each of the 34 districts in Punjab, with probability proportional to estimated size of the village population. The population was based on detailed tables from the 1998 census. The procedure recommended in the WHO training module on Assessment of Immunization Coverage was adopted. Clusters were designated as urban and rural in all 34 districts of Punjab except Lahore, where 30 clusters each were designated for urban and rural populations separately. This way we could compare EPI coverage of all 34 districts of Punjab. Because there were 30 clusters each for urban and rural Lahore, a comparison is made in the results section between urban and rural area coverage.

b. Cluster Confidentiality

Learning from past experience, *The Consultant Consortium (TCC)* decided to keep the clusters confidential to ensure true coverage figures. Each district's clusters were printed separately and were enclosed in sealed envelopes by *TCC*. These envelopes were sent to Regional Coordinators of respective districts, with specific instructions on when to open them. They were required to open the clusters the evening before they were scheduled to cover a particular district, in the presence of at least two Field Supervisors. These envelopes were sent back to the Coordination Office with the filled Cluster Forms. Reports from various agencies and personnel have confirmed that there were no cluster leakage and our data represents the factual picture of EPI coverage.

c. Sample Size

Total number of districts in Punjab (excluding Lahore) = 33

Lahore Urban & Rural = 2

Total number of districts for this study = 35 districts

Number of clusters to be chosen from each district = 30 clusters

Total number of clusters = $35 \times 30 = 1050$ clusters (A)

Number of households to be interviewed from each cluster for infant immunization = 7

Number of households to be interviewed from each cluster for TT immunization of mothers = 7

Total number of households from each cluster = 14 (B)

Total number of households to be interviewed = $A \times B = 14 \times 1050 = 14700$

d. Clusters Identification

In each district, clusters were identified by Tehsil, Qanoongo Halqa, Patwar circle and name of the village. After that Coordination Office identified major landmarks in the vicinity of clusters. In order to facilitate field teams in reaching their respective clusters,

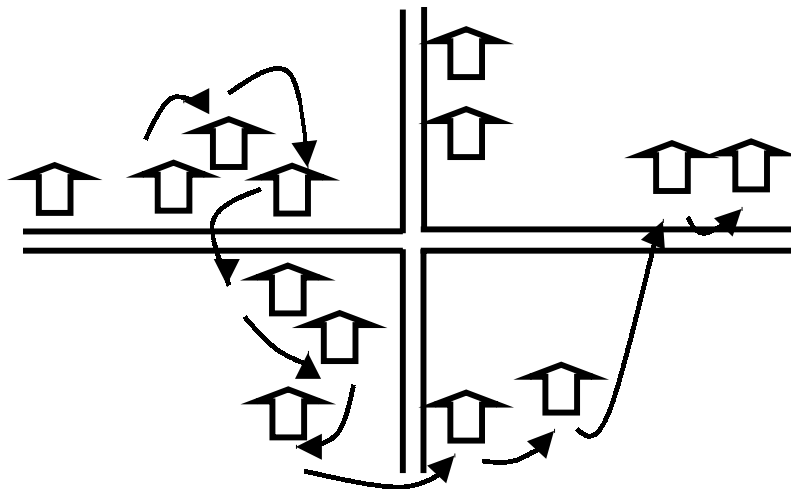
TCC decided to locate the nearest possible government health facility. This was done in absolute confidence at Coordination Office, by obtaining lists of health facilities of Punjab from DG health office and then identifying the nearest possible RHC or BHU. This information was included in clusters information sent to RCs of the four regions, Bahawalpur, Faisalabad, Lahore and Rawalpindi.

Teams were instructed to approach BHU and RHC only when they were not able to locate the clusters. However BHU or RHC personnel were not to accompany the field team and participate or interfere with the actual survey. Reflecting back on this strategy, this helped the field teams immensely. At the same time, field officers of FBS also assisted the teams in identification of the clusters, especially in the urban areas, where block numbers identify localities.

e. Sample Household Selection

Following procedure was followed to select the households:

- The teams went to the center of the cluster and spun a bottle on the level ground. Wherever the bottle pointed when it stopped that was the direction for the first household. The team then counted number of houses, which existed along the directional line selected from the central location to the edge of the village. Then a random number was selected between 1 and the total number of houses along the street selected. That identified the first house visited. For example, if number 9 was randomly selected, ninth house from the central location along the chosen direction was visited as the first household.
- The second household visited was the *one, which was nearest to the first*. The next nearest household was the one whose front door was closest to the front door of the household just visited.



- Seven consecutive households with at least one child in the target age range (12-23 months) were selected for the survey. Mother of each child in the target age range was interviewed for vaccination status of identified child.

- Seven consecutive households with at least one child in the target age range (0-11 months) selected for the survey. Mother of each child in the target age range was interviewed for her own TT vaccination status.

In case the access to the cluster was not possible due to weather or security reasons, the teams replaced that cluster with nearby clusters.

Majority of Field Survey was completed in **Five Days** throughout the Province, with exceptions of Rawalpindi and Faisalabad regions where work was finished in a week.

f. Questionnaires for Coverage Survey

Three data collection forms were used for the coverage survey: one for household interviews to document immunization status of the target infants, second to document tetanus toxoid (TT) immunization status of women of childbearing age and last to interview community leaders regarding the EPI Crash program. The previously validated WHO vaccination cluster-survey approach has been closely adhered to in this project. Templates for the first two forms existed as part of the WHO cluster survey documentation and were the basis for development of the household and TT forms actually used. The topics included:

1. Demographic information of the household.
2. Coverage of EPI antigens including BCG, OPV, DPT and Measles.
3. Communication Means.
4. NID/SNIDs Coverage.
5. Opinion of the mothers on vaccination.
6. Mother's preference for venue & time of vaccination.
7. Attitude of vaccinators towards mothers and children.

g. Sources of Information

It was planned to record immunizations *recorded on an immunization card (by card)* and also immunizations that the *mother says were received (By history)*, but are not confirmed by an immunization card.

The phrase "**by card**" meant that the information about a child's immunization history was obtained by copying it from an immunization card. Immunization cards are usually kept by the mother at home, and provide an important, reliable source of information. Cards provide the exact date of immunization and, therefore, a way to verify whether the child was of the appropriate age when immunized. However, immunization cards are often lost or incompletely filled out. In this situation, the number of immunization records in the survey may be an underestimate.

"**By history**" meant that the child's mother or caretaker *reported that* the child had received the immunization, but did not have it recorded on an immunization card. Immunizations that are reported "by history" means that the survey will have a more complete record of immunizations given. However, a problem with this type of information is that errors may occur. For example, exact dates of immunizations are not known, and mothers might not remember the number of immunizations that were given

to the child. If the health worker did not explain his actions to the mother, she might think the child received a certain type of immunization when in fact he did not.

We used both the sources of information and measured coverage rates "by card" and by "card *plus* history". The final forms were developed in an interactive process by a team consisting of the Core Consultants. Input was also taken from computer experts on how to make the questionnaire *data-entry friendly*.

h. Field Testing

The approved questionnaire was put to a pre-test. Pre-test was preceded by a short training session for the Regional Field Supervisors. Participants were oriented to the project. They were taken through the questionnaire and instructed on how to fill in the answers to various questions. Various techniques of asking the questions were also explained.

Questionnaire was field tested in locality of Gawalmandi, which is adjacent to King Edward Medical College/Mayo Hospital, Lahore. On average, a full questionnaire (consisting of 1 infant immunization form, 1 TT vaccination form and 1 community leader form), took between 15 to 20 minutes.

After the fieldwork, the teams gathered at the coordination office and gave their feedback. Each item was reviewed individually and problems with the various questions were discussed. The questionnaire was finalized with due modifications like immunization card number, addition of skips, questions about NIDs/SNIDs and attitude of vaccinators towards children & mothers. Final questionnaire was formatted by the computer specialist and coordination office to make it more *user friendly* and simple to fill.

i. Survey Manual

For the field staff, Coordination Office developed a comprehensive survey manual, containing information on all items of the questionnaire. This served as a guideline for Field Supervisors and Medical Students in order to clarify their concepts. This manual contained information on following subjects:

1. Introduction to the project and its objectives.
2. Interpersonal Communication
3. Planning the Survey
 - Selection of the Target Children
 - Source of Information
 - Number of Interviewers & Time Duration
 - Clusters Identification
4. Conduct the Survey
 - Selection of Household
 - Selecting Subsequent Houses
5. Survey Methodology
6. Guidelines on Filling the Questionnaire
 - Guidelines for Household Interview Form
 - Guidelines for Cluster Form for TT Immunization of Women
 - Guidelines for Community Leaders Interview Form
7. Roles and Responsibilities of Field Supervisor

j. Training

Core team conducted trainings of the field staff in a cascade manner. Purpose of these trainings was to minimize the errors in the field during data collection.

First Regional Coordinators (RCs) and Deputy Regional Coordinators (DRCs) were trained at the coordination office by the Core team. Objectives and methodology of the survey were explained. They were trained on how to conduct similar trainings for Field Supervisors and Medical Students. They were also taken through each question in the data collection tool. Importance of questions and various interview techniques were also explained.

RCs and DRCs conducted similar training in their respective regions for Field Supervisors. The Coordination Office provided them with visual aids, transparencies and outline of training, in order to have uniform training in all regions. These trainings were conducted in groups of 12-15 people and field simulation was done after classroom activity.

The training of Field Supervisors and medical students included:

- Class room training
- Hands on training
- Fieldwork

These Field Supervisors in turn trained medical students. Students were divided in two batches, with one batch to be trained each day. These batches were again divided into groups and were tutored by Field Supervisors. This ensured maximum attention on each student as well as rapport building between students and Supervisors for the upcoming field activity. Students and Field Supervisors were taken to the field and actual questionnaires were filled.

The Core team members as well as the RCs & DRCs closely supervised all trainings. Each group was observed for clarity of concepts and tricky questions were explained in a reiterative process.

Students and Field Supervisors were taken to the field to various communities where they were asked to approach households and fill questionnaires. This helped them in not only understanding the questionnaire but in anticipating the upcoming field activity.

k. Field Process

Planning of the survey was done both at macro and micro level. Punjab was divided in to four regions namely, Bahawalpur, Faisalabad, Lahore, and Rawalpindi; with each region having 8-9 districts. These divisions were solely on the basis of geographic proximity of the districts and do not represent any governmental or administrative divisions. A comprehensive Regional Survey plan was drawn for trainings as well as field survey. Regional plans are given below:

Regional Survey Plan Punjab

DATES	GROUP	BAHAWALPUR	FAISALABAD	LAHORE	RAWALPINDI
8.6.00		Training of Supervisors	Training of Supervisors	Training of Supervisors	Training of Supervisors
9.6.00	A&B	Training of Interviewers	Training of Interviewers	Training of Interviewers	Training of Interviewers
10.6.00	C&D	Training of Interviewers	Training of Interviewers	Training of Interviewers	Training of Interviewers
	A				
12.6.00		1. Bahawalnagar	1. Jhung	1. Narowal	1. Attock
13.6.00		2. Vehari	2. Bahakar	2. Sialkot	2. Chakwal
14.6.00		3. Lodhran	3. Layyah	3. Guranwala	3. Mianwali
15.6.00		4. Multan	4. Muzaffargarh	4. Hafizabad	4. Khushab
16.6.00					5. Sargodha
	B				
12.6.00		1. Bahawalpur	1. Faisalabad	1. Sheikhpura	1. Rawalpindi
13.6.00		2. R Y Khan	2. Toba Tek Singh	2. Lahore (Urban)	2. Jhelum
14.6.00		3. Rajanpur	3. Khanewal	3. Lahore (Rural)	3. Gujrat
15.6.00		4. DG Khan	4. Sahiwal	4. Kasur	4. Mandi Bahuddin
16.6.00			5. Pakpattan	5. Okara	

Map of Punjab Showing All 34 Districts

I. Number of Interviewers

A total of 387 interviewers and 43 Field Supervisors were hired for this project. Following medical colleges collaborated in this project:

- a. Rawalpindi Medical College, Rawalpindi.
- b. Punjab Medical College, Faisalabad
- c. King Edwards Medical College, Lahore
- d. Quaid-i-Azam Medical College, Bahawalpur.

Demonstrators of these medical colleges were signed up as Field supervisors. These persons were chosen because of their supervisory skills and teaching background. As these personnel are used to handling groups, and checking details, this made them ideal to supervise the field teams. Their main responsibilities were:

- Training the medical students.
- Managing teams in the field.
- Supervising data collection.
- Verifying the collected data.

Fourth year male students of the medical colleges mentioned above were taken on board as interviewers. These students have had their academic rotation in Community Medicine and clinical attachment in Pediatrics, which made them ideal to get sensitive information on vaccination. As students are used to taking history and developing rapport with patients, this provided a knowledgeable, easily trained, and enthusiastic field corps to administer the survey. Although female medical students were ideal for this project, it was not possible to arrange secure logistics for them. These students were identified by their college's Community Medicine department. These students were divided into Field Teams, which were made up of (generally) two medical students. One Field Supervisor was responsible for five such teams in the field.

Table: Regional Breakup of Interviewers and Field Supervisors

Name of the region	No. of teams*	No. of Field Supervisors
Bahawalpur Quaid-i-Azam Medical College, Bahawalpur	60	12
Faisalabad Punjab Medical College, Faisalabad	30	6
Lahore King Edward Medical College, Lahore	60	13
Rawalpindi Rawalpindi Medical College, Rawalpindi	60	12
Total	210	43

*Each team comprised of generally two medical students with incidences where team comprised of one medical student.

m. Survey Process

Apart from the Lahore region, where teams come back each day, all other field teams moved around and stayed overnight in various districts. Field teams met at their respective coordination points each morning from approximately 5:00 AM until 9:00 AM during the week of June 12th, 2000 and received blank data collection forms and clusters locations within which they were to work for the day. Each Field Supervisor received five cluster forms and spare household forms and stationery for his five teams. They were then transported to the sites to conduct the survey. Transportation was prearranged by their respective RCs. Field Supervisors dropped their teams at their assigned clusters. Upon reaching the cluster, they approached local people and introduced themselves. After that they informed them of their objectives and asked if local residents could accompany them to the houses. In addition, students carried their white overalls with them, which facilitated their entry in the communities. After that Field Supervisors left for the next cluster. None of the household refuse to answer the students.

Students selected the first house randomly by standing in the middle of the cluster and rotating a bottle on the ground. Where bottles were not available, they used their pens. After determining the direction of households, they approached the first house in that direction. After approaching the house, they asked if they could see the head of the household and introduced themselves. Then they inquired from the head of household about the number of children and checked if that particular household had any children of their target age group. If they found any child, then they included all the children of the target age group from that household and interviewed their mothers, otherwise they moved on to next household. A questionnaire was completed in each household. When they had interviewed seven households with at least one child of age group (0-11 months), seven households with at least one child of age group (12-23 months) and one community leader, they had then finished one cluster. Work was usually completed within 6-8 hours (depending upon the location of the cluster) and Field Supervisors collected forms on the same day. The hot weather was the main obstruction in the field work. TCC appreciate the work of medical student who really worked hard with extreme weather where as temperature was mostly above 40°C.

Field Supervisors actively monitored team's work at the households. They checked the forms when they were picking up their teams from the clusters for incomplete items, discrepancies and skipped questions. Then they collected the questionnaires from their teams and edited those before handing them over to their respective RCs.

n. Survey Duration

The whole survey was completed in **Five Days** throughout Punjab, except in Faisalabad region where survey was finished in seven days. The reason of extra two days were lack of appropriate number of male medical students. Punjab Medical College, Faisalabad has predominantly female medical students, the total number of fourth year male medical students was 65. For this survey, we were able to get 60 medical students from the above-mentioned college. It is remarkable that these 60 medical students covered 7 districts.

o. Quality Checks

The Field Supervisor examined each form for errors or missing data and corrections were made in the field. Field Supervisors were requested to initial each form as evidence of review. The Field Supervisors then forwarded the forms to the coordinating center the next morning. At the coordinating center, the forms were ordered, and each page of each form was examined by members of the core team for completeness and inconsistencies. Any mistakes or discrepancies were then conveyed to that particular team and Field Supervisors. As the teams gained experience, there were fewer mistakes. Thus, each form was examined on multiple occasions as a check of quality prior to data entry.

p. Supervisions & Monitoring

RC & DRCs followed teams of their respective regions in the various districts. They checked teams to see whether they reached the appropriate cluster and upon reaching the field site whether they were following the study protocol.

Various government officials and personnel from UNICEF, WHO, World Bank were requested to conduct spot field checks to see that the teams were in the field, visiting the correct sites, and administering the questionnaire correctly. Verbal communication with some of above-mentioned personnel disclosed that field teams were working according to study guidelines and protocols. They were selecting the houses appropriately and interviewing the mothers according to the study guidelines.

q. Difficulties in data collection

The fieldwork generally went smooth with exception to two incidences.

One of the team missed one cluster in Gujranwala where total cluster completed for the district were 29. The cluster was missed because of misunderstanding between two team. Next day all the teams were going to Hafizabad, which is an adjacent district to Gujranwala, so the team, which missed the cluster, has gone to that village in Gujranwala and completed the cluster. That day the team returned to its base i.e. Lahore Coordination office at 11.00 p.m.

The other incidence was in the Bahawalpur Region where the listed cluster was missing because the whole village was cut down with other part because of a damaged bridge on the river. The R.C. consulted the coordination office for guidance & they advised the team to select the adjacent area to complete the cluster in that district as per methodology.

r. Data Management

Data Management Team

TCC's consultant for data management was incharge and was assisted by computer technicians of different expertise. This team is experienced and has done similar work for the Punjab, Sind & Federal governments, the Asian Development Bank and World Bank.

Software

The Oracle 8.0 system, operating under Windows NT serves as the basis for the management of data entry, databasing, queries and table generation. Oracle is a well-established, world-class data management system, known for its flexibility and robustness. Oracle Developer 2000 was used to develop the data entry system. The designed software was tested by entering questionnaires from the field-testing and actual forms from field survey. The analysis of the data was done using SAS (Statistical Analysis System).

Dummy Tables

The Oracle system permits the core team to generate preliminary data tables, requiring only a low level of support from computer specialist. The Oracle system also allows production of specialized data sets that are accessible by Microsoft Excel spreadsheets and the SAS, so that various supplementary analyses could be conducted after the formal analysis was completed.

Editing

Editing of the forms was started simultaneously after receiving the forms. These forms were first reviewed by the RCs/DRCs to check for any missed pages, skipped questions and identification marks, and then handed over to editing team in Coordination Office where the Core Team monitored it closely.

Data Entry

A 'single entry' system was used, with automatic edit checks for most data fields. Single entry was more feasible under time constraints than double entry and, for the purposes of this survey provided sufficient accuracy. Data entry of the household survey forms started simultaneously with data editing. Data entry took about 15 working days to enter all data from the approximately 15-16 thousand pages generated by the survey. Members of the core team extensively reviewed the forms with representatives of the data management team. Questions during data entry, which were not immediately resolved by the data management team, were forwarded by telephone to members of the core team. All the forms, which were entered by the morning, were conveyed daily to the Coordination Office and a summary was given for all the forms entered.

Data Analysis

Statistical Analysis was performed after the data was cleaned and quality control was ensured. The data files were divided into three sections:

- A. Child - including the information on immunization coverage and the information collected from the mothers regarding their beliefs, awareness and attitudes towards vaccination of their children.
- B. Mothers' vaccination coverage for TT vaccination and
- C. The awareness and beliefs of the opinion leaders from the community.

Each file was converted from Oracle into Excel files so that they could be read into SAS statistical package for further analysis.

As SAS files, each variable was coded and normal limits identified for them. An error list was then printed of the outliers for each variable. This included both punching errors and data errors. The maximum errors were found in the entry of the dates where nearly 2% were entry errors. The lists were printed and corrected from the original data forms. Some of the variables, mentioned under reliability of the data (Results Section) were used to check for internal consistency. The data was found to be consistent since the information in the three files agreed to more than 80%.

Simple frequencies were run on each variable excluding the dates of vaccinations. Some cross tabulations were also done. Proportions are expressed as percentages throughout. The immunization coverage is expressed as proportion of children who were vaccinated against each antigen, in general, and for all the antigens, in particular, are expressed as percentages. Some of the demographic variables were used to look at association between, for example, education of the mothers and their ability to keep the card or get their children immunized fully before one year of age etc. To test the differences between two or more proportions, a Chi-square test with appropriate degrees of freedom was used.

B. Qualitative Study Design (System Analysis)

a. Key Informant Interviews

The main purpose of these qualitative interviews was to:

- Assess the efficiency and effectiveness of the DOH in terms of mobilization and utilization of resources for routine EPI activities
- Identify factors that contributed towards success and shortcomings/drawbacks of the Crash Program

b. Key Informant Interview Outline

The topics covered in the key informant interviews included:

- Program Resources
- Technical Aspects
- Program Management and Organization
- Communication and Community Participation
- Monitoring, Evaluation and Feedback

The details of the Key informant Interviews are given in the table on next page.

c. Interview Process

These interviews were conducted over a period of 1 month (July 2000) in Lahore, Faisalabad and Rawalpindi regions. The key informant interviews, personally handled by members of the TPE team, were conducted in Urdu & English. All these interviews yielded usable transcripts. The field notes were made in English and later transcribed at the Coordination Office.

The team transcribed the interviews directly into English to minimize data loss, keeping the original phrases and key words that the respondents used. The interviews were read several times and highlighted to identify the common major themes and a loose coding framework was developed.

Table: Outline of the in-depth interviews

Levels	Focus	Area of Concentration
Policy Makers	<ul style="list-style-type: none"> ▪ Secretary Health ▪ Director General Health ▪ Additional Secretary (Technical) ▪ International donor Agencies (UNICEF, WHO and World Bank,) 	<ul style="list-style-type: none"> ▪ Program Awareness ▪ Motivation and Commitment ▪ EPI Program Organization ▪ Program Successes & Weaknesses ▪ Communications ▪ Supervision ▪ Program Resource Constraints ▪ Future Plans & New Initiatives
Operational Program Managers	<p><u>Senior Level</u></p> <ul style="list-style-type: none"> ▪ Director Health Services (EPI) ▪ Professor of Pediatrics Medical College ▪ Divisional Director Health Services <p><u>Mid Level</u></p> <ul style="list-style-type: none"> ▪ District Health Officer ▪ Deputy District Health Officer ▪ DS Vaccination ▪ Medical Officer In-charge (RHC, BHU) ▪ As Vaccination 	<ul style="list-style-type: none"> ▪ Program Awareness ▪ Motivation ▪ Organization/planning/information flow ▪ Crash Program ▪ Resources ▪ Management/supervision/evaluation/training ▪ Issues
Service Providers	<ul style="list-style-type: none"> ▪ Vaccinators ▪ Vaccination Supervisors (e.g. ASVs etc) ▪ Medical Officers 	<ul style="list-style-type: none"> ▪ Basic Knowledge ▪ Training ▪ Reporting ▪ Supervision ▪ Supplies ▪ Cold Chain Maintenance ▪ NIDs / SNIDs
Community Leaders	<ul style="list-style-type: none"> ▪ Imam Masjid ▪ Teachers ▪ Local influential ▪ Local Siyana ▪ Social Workers 	<ul style="list-style-type: none"> ▪ Awareness ▪ Motivation ▪ Commitment ▪ Activities ▪ Suggestions

3. STUDY FINDINGS

3.1 Coverage Survey

The results of the study have been presented first for the province as a whole and the finding of district individual. They are presented in the following sections:

- A. Reliability of the data collected.
- B. Socio Demographic Background.
- C. Epidemiological Background
- D. Awareness about the Immunization Program among the Mothers and Community Leaders
- E. Attitudes and Practices of Mothers and Opinion Leaders towards the Immunization Program

A. RELIABILITY OF THE DATA

The data collected was explored by comparing variables within the Household forms (Immunization coverage of children) and from the forms for the Opinion leaders since the information obtained in the Mothers' immunization coverage forms did not provide with any extra information. So, the variables chosen to show the reliability of the data are discussed in the following section.

Fig 1a shows that the source of information for the mothers was mainly from the Health personnel (35%) and the Mosques* (34%) followed by TV (19%) and much less form other sources. This, was compared with the Opinion leaders – who also thought that the best way to spread the information regarding vaccination of children and mothers was mainly from the mosques (33%), followed by the health personnel (27%) and TV (21%). Mainly these three sources were identified as important (Fig1b).

* It may be clarified that when mosque are mention it is meant that mosque are used for announcements only and not that the Imam have informed the public about vaccination program.

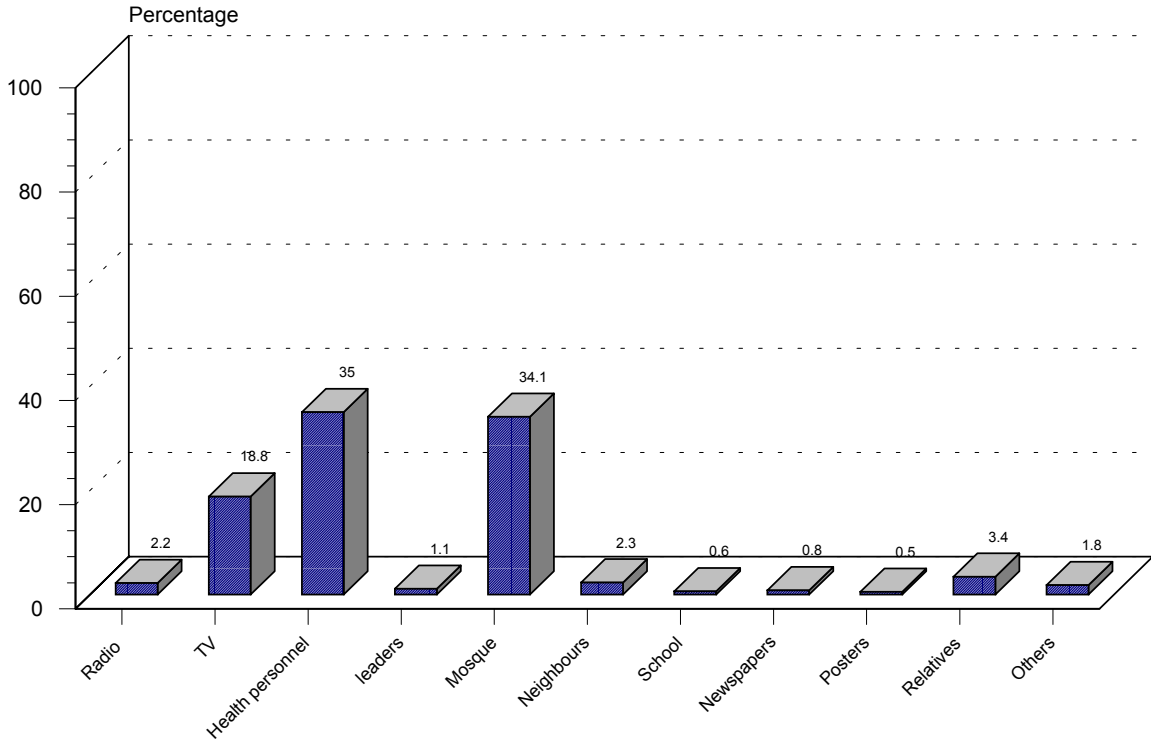


Fig 1a. The responses obtained when mothers were asked about the sources of information regarding immunization of their children.

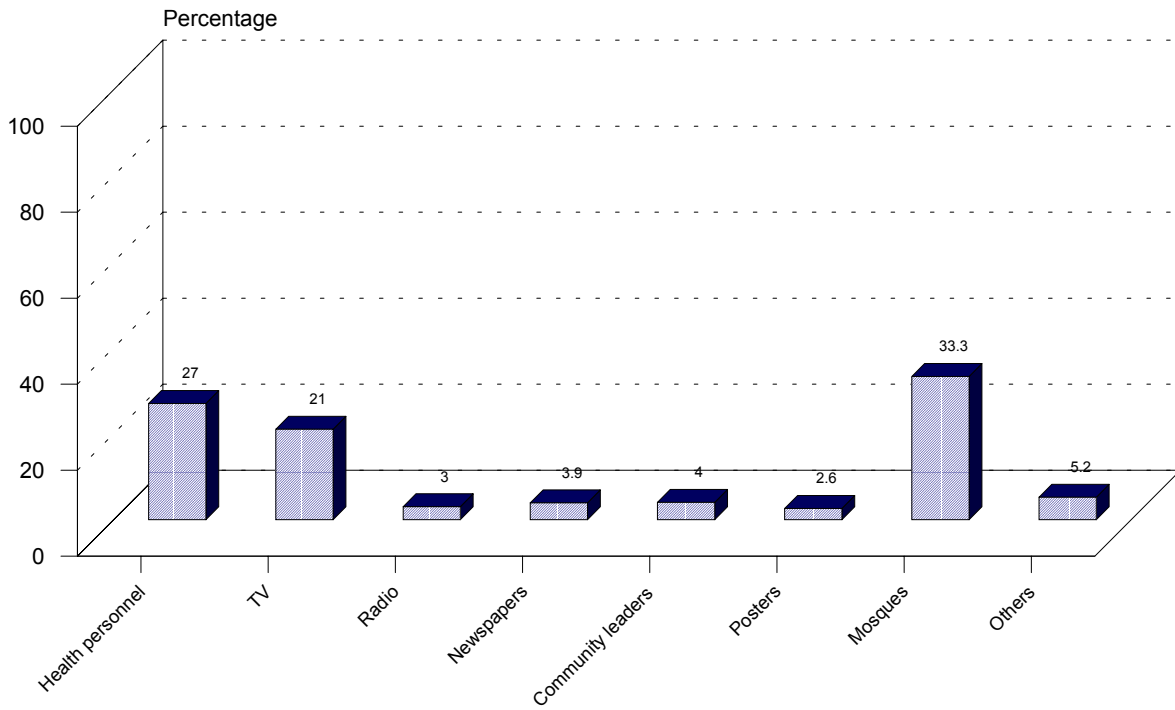


Fig 1b. Opinion leaders - when asked about the best way they thought was for spreading information regarding vaccination.

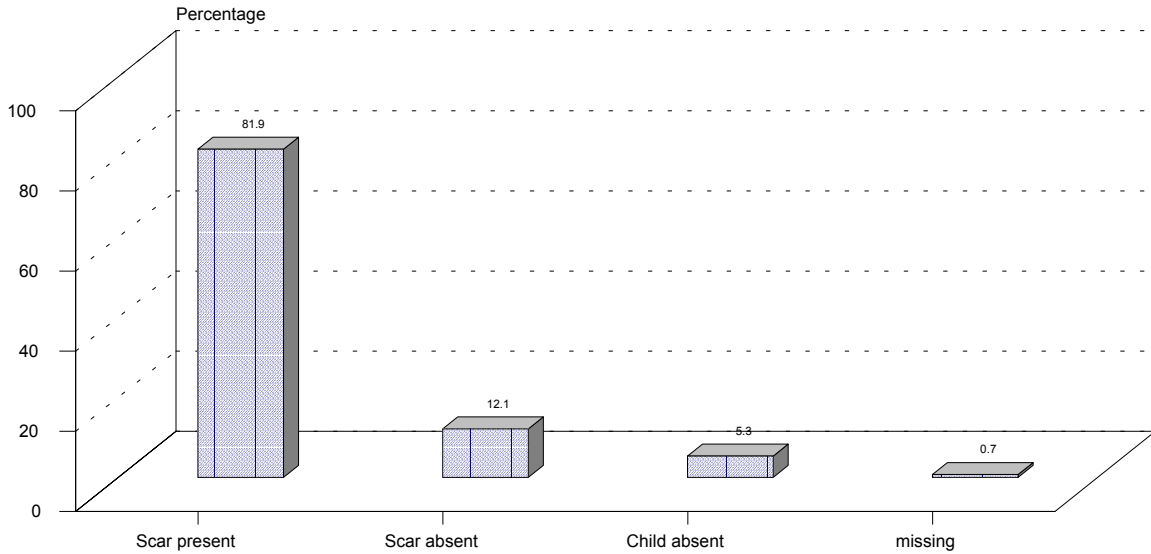


Fig 2a. BCG vaccination when verified by the presence of a scar.

Fig 2a shows the proportion of children reported having a BCG scar (82%) also had their immunization cards (90%). Those who could not show a card but gave the vaccination on history, a scar was seen in 89% of these children (Fig 2b). When a card was available, a scar was not seen in 4% of the children. Furthermore on a positive history of vaccination, a scar was absent in only 4% of the children. So, even the history of vaccination, when qualified by the presence of a scar, could be relied upon as a true information (Fig 2b). Therefore, in cases where the child was absent and the card or history was available (5 and 6%), they could also be included as reliable information for the rest of the analysis.

Fig 3 shows that 50% of the mothers had the vaccination cards of their children while 76% of the mothers admitted that they were told to keep the card safe. Out of the other half of mothers who did not show a card, 24% said they were told to keep the card safe. This indicates that 62.8% of the mothers could keep the card safe when they knew that they had to be kept safe i.e., out of 5099 mothers who said they were told to keep the cards safe, 3207 of the mothers actually did. This shows the response of the mothers related to their capability of keeping the cards safe seems to have been tone.

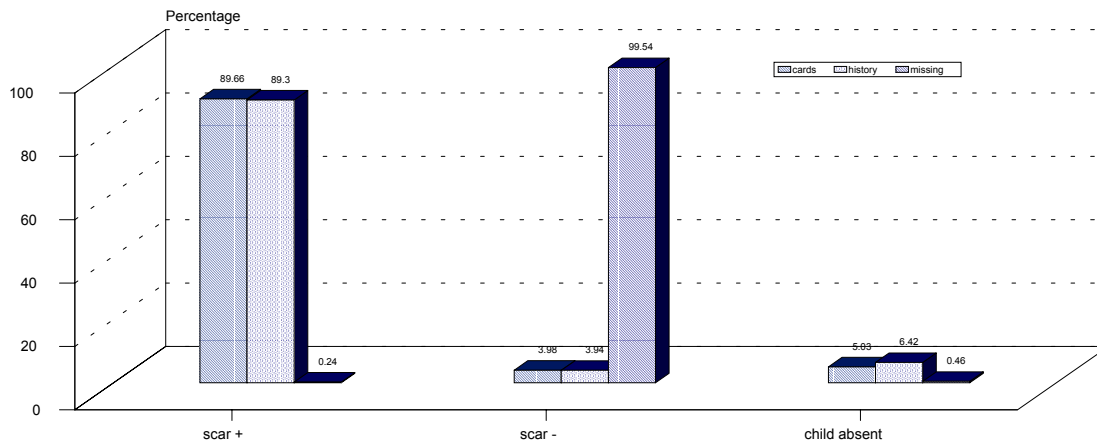


Fig 2b. The verification of BCG vaccination on observing a scar versus the presence of cards and on history of vaccination

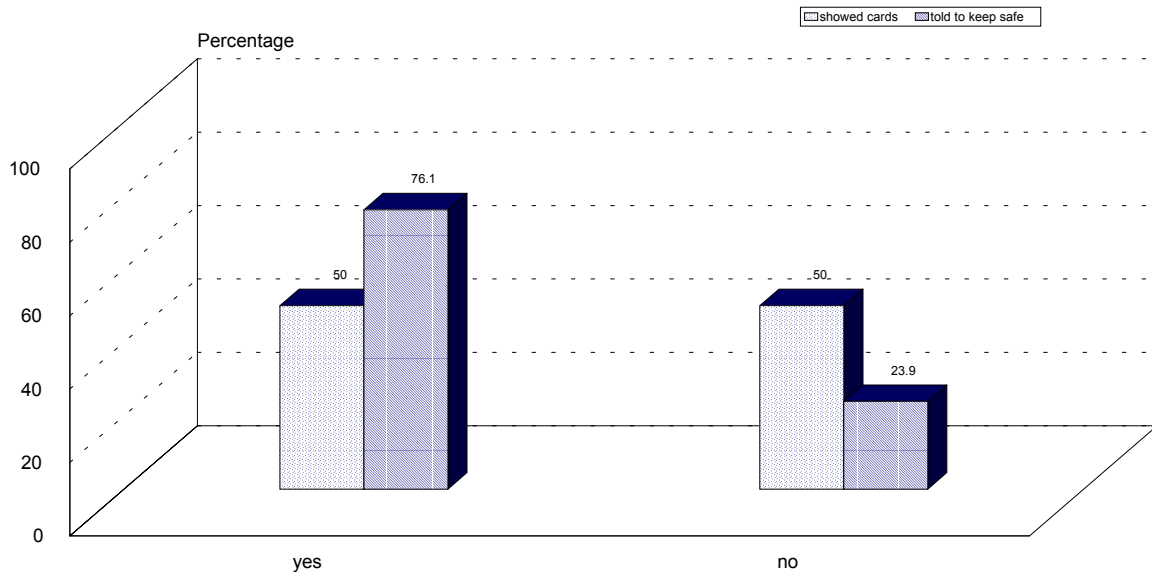


Fig 3. The proportion (%) of mothers who showed the immunization cards for their children and answered that they were told to keep them safe.

Fig 4 shows the responses of the mothers when asked if their child was vaccinated. Ninety-five percent of the mothers said that their child was vaccinated. The actual coverage, confirmed by

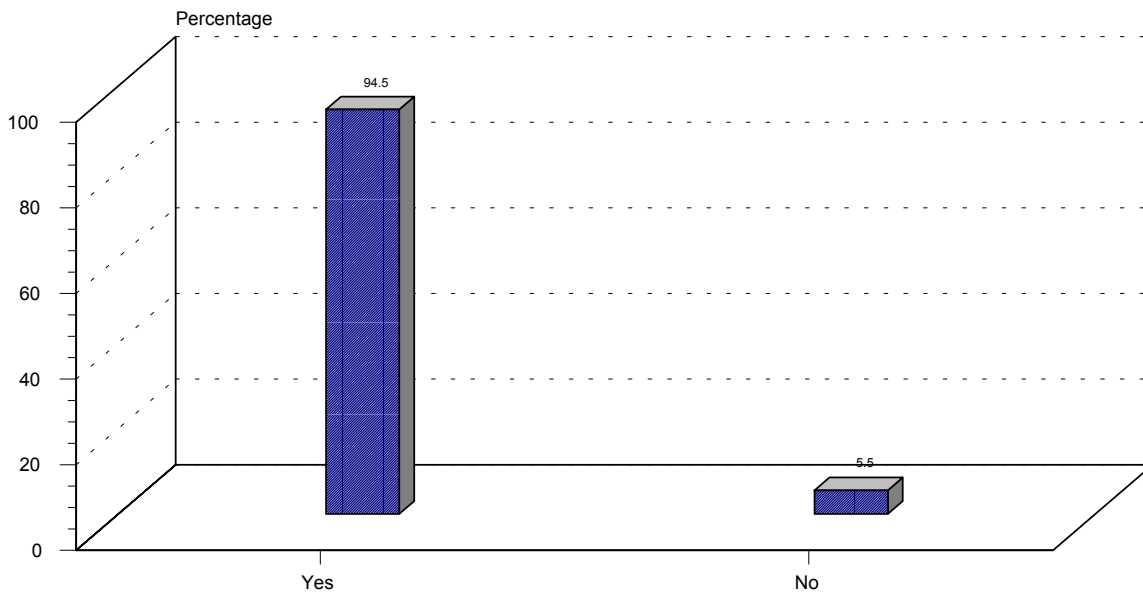


Fig 4. Responses of the mothers when asked if their child was vaccinated.

dates and history showed that 92% of the children had at least one antigen i.e., BCG, (Fig 5 and Table 1). Fig 6 indicates the proportion of mothers who indicated the number of times their child was vaccinated. Seventy-five percent of the mothers indicated that their child needs to have atleast three or more doses while Fig 5 and Table 1 show that 70% of the children

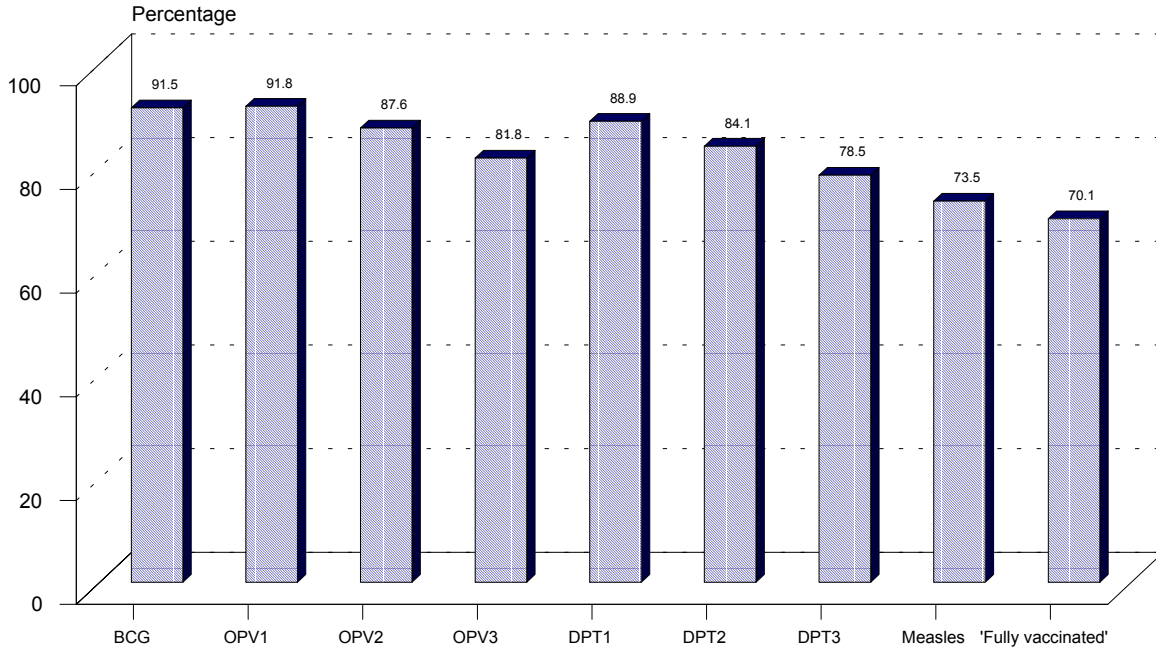


Fig 5. Vaccination coverage (%) by antigen among children surveyed.

were 'fully vaccinated'. This gives a high agreement (more than 85%) between the mothers' responses and their actual practice. This can also be related to Fig 7 which depicts the proportion of mothers (62%) indicated the number of times the child needs to be vaccinated as either three or more than three times.

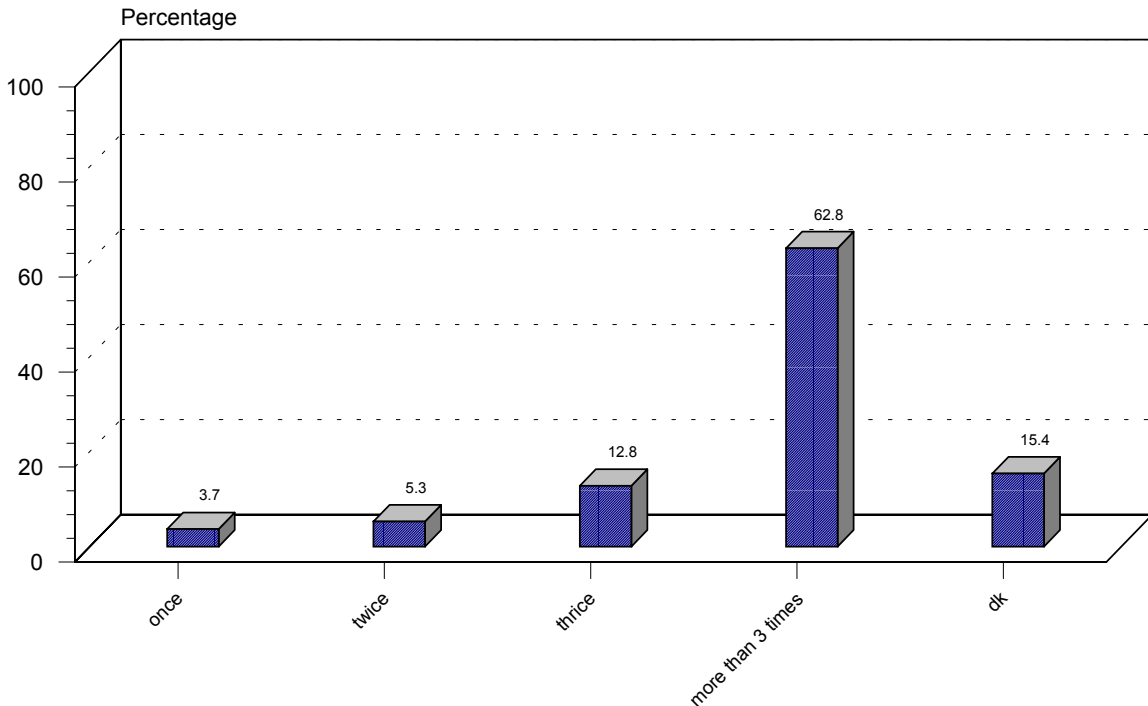


Fig 6. The proportion (%) of mothers who responded when asked the number of times their children had been vaccinated.

So, the information collected seems to be reliable and the data of good quality.

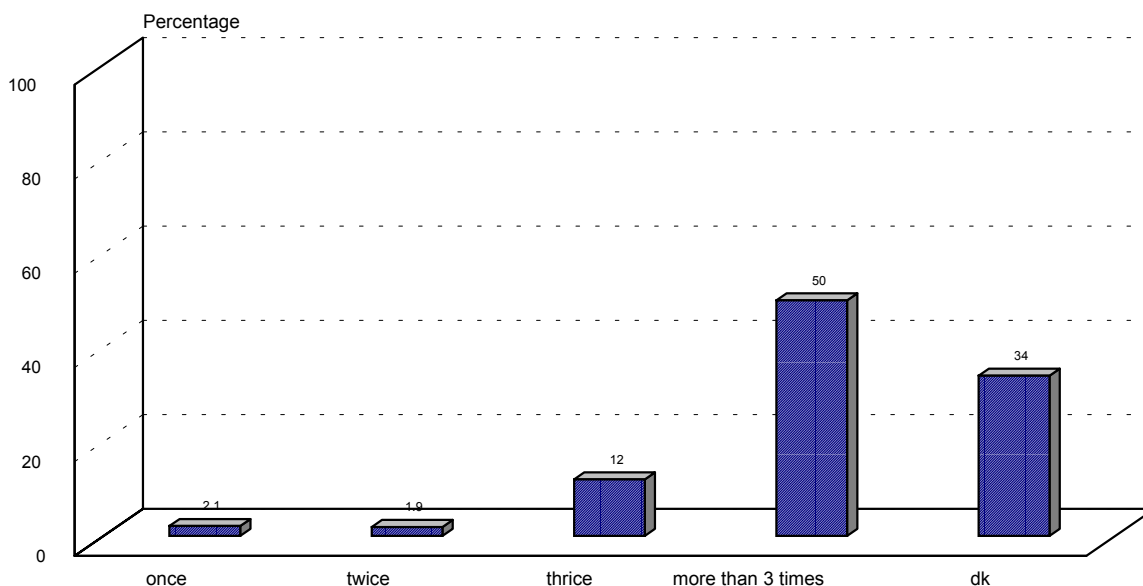


Fig 7. The mothers' responses when asked about the number of times their child needs to be vaccinated

CONFIRMATION OF RESULTS

During the initial phase of analysis, it was noted by the team that some of the districts were following the EPI program in a commendable way while there were other districts, which were showing minimal activity. Vehari was taken as an example of the former and Rajanpur as an example of the latter. Out of these two districts, team chose clusters where maximum vaccination was being performed either in the health care facilities or by the mobile teams. Thus two clusters each were selected. The reason for this was to actually visit these clusters and to validate the findings of the survey by team.

The team consisting of two senior consultants visited Vehari as the first phase of their activity. The clusters chosen were visited and the DHO responsible was also interviewed. The DHO helped by sending his vaccinators to the respective clusters. The doctors from the team carried the survey questionnaires with them. Each cluster was entered as was expected from the survey logistics with the starting point as the center of the cluster. Households were quickly identified which were found: to be correctly marked and the vaccination cards from the families confirmed entries about vaccinations. There was a close agreement for the children's coverage to more than 90%. While for the maternal vaccinations, close to 80% agreement was found with the information already collected by the survey teams. Some of the mothers have either gone for the day or were not available in person. The DHO when contacted showed a positive attitude towards vaccinations and had updated information from all the centers that worked under him. The vaccinators and LHVs were very responsive and could trace the mothers without difficulty. The mothers seemed to be well informed about the EPI activities and could produce the vaccination cards promptly. The cards showed dates that were written on different occasions and tallied with the vaccinators registers.

In Rajanpur, the team started to work early keeping in mind the distances involved. The DHO office was located in a far off corner of Rajanpur. The vaccination teams were not responsive and the vaccinator deputed to bring the team to the clusters identified was least aware of the people or the locality. His attitude towards the mothers was disrespectful and seemed not to be aware of the cluster population. The survey team had started in the way they were trained and the houses could be located without much problem. The information about vaccination for both the mothers and children was correctly entered. Few mothers could produce vaccination cards and wanted to be vaccinated but only a few had actually utilized the facility. The LHV could not accompany the team since it was her antenatal day and was very busy. The team found that the information brought by the survey teams was in agreement with their findings by 90% for the children and mothers' vaccinations. Only one cluster could be covered in one day because of the distances that needed to be covered.

B. DEMOGRAPHIC BACKGROUND

Little information was collected for the sociodemographic variables since that was not essentially the objective of the survey.

a. Sex distribution Fig 8 shows that among the children (n=7372), 56% were males and 44% were females. The difference however was significant ($p < 0.01$). This increase of the males could be entirely random and not related to any female neglect or bias.

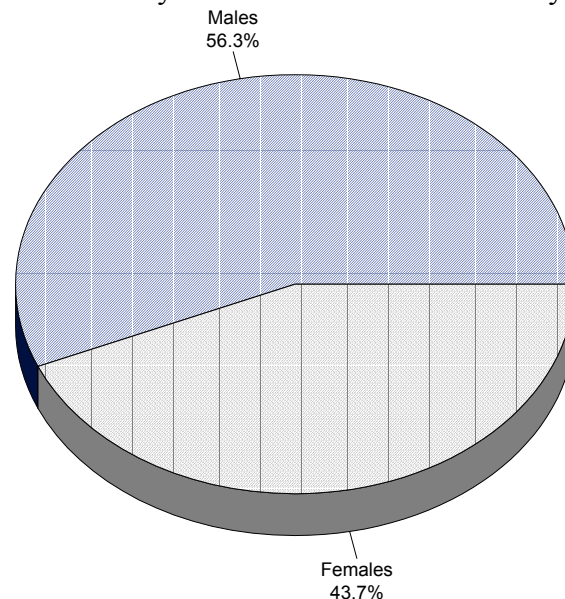


Fig 8. Sex distribution among the children surveyed.

Table 2 shows the differences among males and females relating to the awareness of the mothers about the immunization program and whether they could tell if the child was vaccinated were not significantly different. The mothers could show cards for 49% of the males as compared to 51% of the females. Even the SNIDs coverage was the same for both the sex.

Table 2. The differences in proportion (%) of males and females for the maternal knowledge, attitudes and vaccination status are shown. The percentages are shown in parenthesis. The differences were explored using a Chi-square test with one degree of freedom. No significant differences were seen.

	Males n=4154	Females n=3218
Mothers aware about immunization program	3947 (95.85)	3062 (95.93)
Mothers say the child is vaccinated	3936 (94.75)	3025 (94.00)
Can show immunization cards	1924 (49.32)	1526 (50.88)
Got first Polio dose during the last SNID	4083 (98.27)	3150 (97.89)
Vaccination status:		
▪ Fully vaccinated	2835 (68.25)	2170 (67.43)
▪ Partially vaccinated	1115 (26.84)	858 (26.66)
▪ Unvaccinated	204 (4.91)	190 (5.81)

b. Education of mothers The education of mothers was recorded according to the number of school years. Fifty-eight percent of the mothers had never been to a school although 21.5% of the mothers could read and write or read only. Only 15% of the mothers had had 10 or more years of schooling (Fig 9).

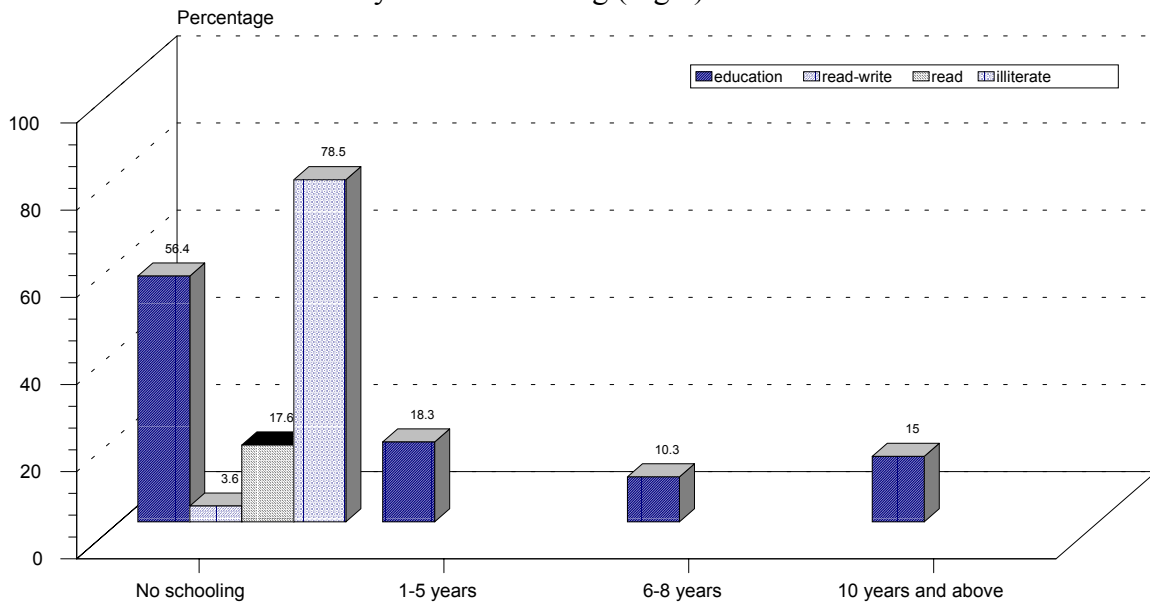


Fig 9. Education of mothers

c. Age and sex of the Opinion leaders Median age was 45 years with a range from 14 - 95 years. The distribution was skewed to the right therefore, median age is presented. Ninety-seven percent of the respondents were males as compared to only 3% females (Fig 10).

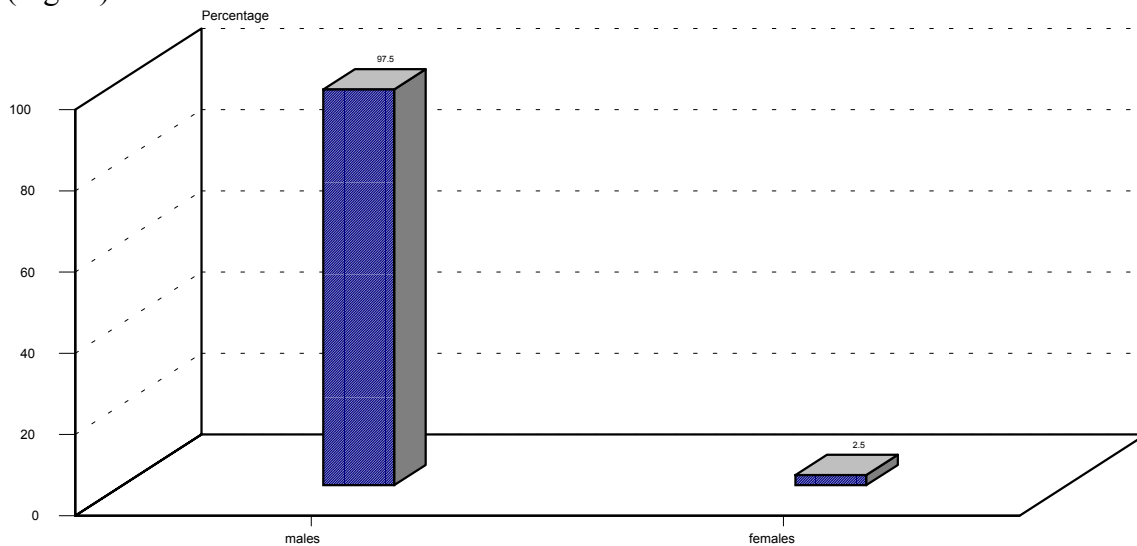


Fig 10. Sex distribution among the opinion leaders.

d. Occupation of the Opinion leaders Fig 11 shows that 31.4% of the opinion leaders fulfilled the criteria of a local notable, 12.3% were imam masjid, 13.1% teachers and 43.2% were identified into 'others' category. They were mainly landlords, shopkeepers, businessmen and social workers.

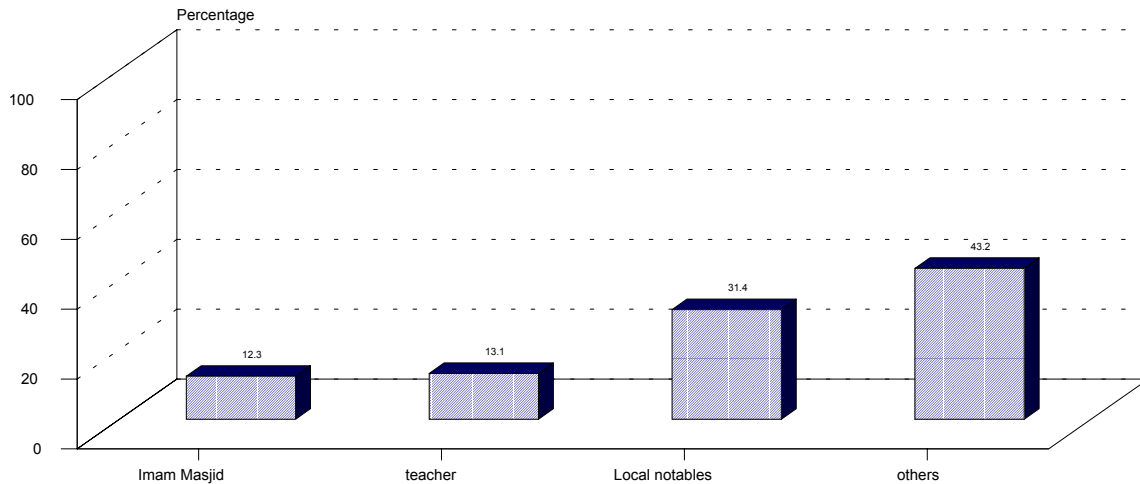


Fig 11. Occupation of the opinion leaders

C. EPIDEMIOLOGICAL BACKGROUND

To identify a child between the specified birth dates so that the child would have completed his first year as described in the Methodology Section, an average of 3-4 households had to be visited.

Immunization coverage of children

a) Provincial Coverage

Immunization coverage by cards and history Table 1 shows the proportion of children who reported to be vaccinated with different antigens and the number of doses according to either the dates on their cards or by a positive history of vaccination. The total number of children varied between 5420 (for measles) to 6768 (for OPV 1st dose). Table 1 and Fig 13 also depict proportion of 'fully vaccinated' children indicating the children who had had BCG, three doses of OPV and DPT and Measles irrespective of the age at vaccination.

For BCG the presence of scar was recorded to confirm the vaccination. Fig 2a shows that 81.9% of the children had a BCG scar while 5.3% of the children were absent at the time of interview. Twelve percent of the children had no BCG scar. Out of the 82% who had a scar, 90% of them also possessed an immunization card. Although vaccinated, 4% of the children did not have a scar while 5% of the children qualified for BCG vaccination from the cards but were absent at the day of interview. Similar findings were for those who were vaccinated on history only (Fig 2b). Since the proportion of children who were absent and a card was shown was small, their dates on the cards were considered in the analysis. Also when the agreement between the presence of scar for BCG and the history of vaccination coincided so well, we have included them in the analysis for coverage as well.

The source of BCG vaccination indicated that a Health facility was most often visited for vaccination while 43% of the children were reached by the mobile teams. Private clinics, other health care outlets were not popular sources of immunization (Fig 12).

Table 1. Immunization Coverage using the information from the cards and on mothers' history for all the six antigens by Districts. Each district has from 27-30 clusters. From each cluster, at least 7 children were identified. The total number of children examined were 7372.

Districts	BCG		OPV-1		OPV-2		OPV-3		DPT-1		DPT-2		DPT-3		MEASLES		Proportion 'fully' vaccinated*	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
Attock (N=210)	185	88.1	186	88.6	173	82.4	158	75.2	185	88.1	169	80.5	154	73.3	145	69.0	138	65.7
Chakwal (N=205)	188	91.7	188	91.7	183	89.3	178	86.8	186	90.7	181	88.3	175	85.4	163	79.5	160	78.0
Gujrat (N=218)	211	96.8	214	98.2	211	96.8	200	91.7	208	95.4	205	94.0	199	91.3	191	87.6	183	83.9
Jhelum (N=203)	193	95.1	193	95.1	191	94.1	183	90.1	193	95.1	189	93.1	181	89.2	173	85.2	171	84.2
Khushab (N=213)	207	97.2	209	98.1	200	93.9	194	91.1	208	97.7	199	93.4	194	91.1	187	87.8	182	85.4
MandiBahaud Din (N=213)	202	94.8	205	96.2	197	92.5	190	89.2	202	94.8	193	90.6	187	87.8	175	82.2	170	79.8
Mianwali (N=188)	178	94.7	178	94.7	162	86.2	148	78.7	177	94.1	161	85.6	148	78.7	133	70.7	126	67.0
Rawalpindi (N=192)	176	91.7	181	94.3	174	90.6	166	86.5	172	89.6	167	87.0	164	85.4	149	77.6	142	74.0
Sargodha (N=205)	195	95.1	193	94.1	187	91.2	168	82.0	190	92.7	180	87.8	162	79.0	158	77.1	147	71.7
Bhakkar (N=207)	189	91.3	191	92.3	184	88.9	176	85.0	190	91.8	184	88.9	176	85.0	167	80.7	160	77.3
Faisalabad (N=227)	202	89.0	214	94.3	199	87.7	178	78.4	199	87.7	179	78.9	160	70.5	144	63.4	128	56.4
Jhung (N=215)	198	92.1	200	93.0	187	87.0	172	80.0	187	87.0	168	78.1	151	70.2	145	67.4	135	62.8
Khanewal (N=219)	212	96.8	212	96.8	207	94.5	192	87.7	212	96.8	206	94.1	191	87.2	183	83.6	176	80.4
Layyah (N=216)	190	88.0	193	89.4	181	83.8	162	75.0	191	88.4	179	82.9	161	74.5	155	71.8	146	67.6
Pakpattan (N=215)	195	90.7	201	93.5	191	88.8	174	80.9	189	87.9	179	83.3	161	74.9	147	68.4	137	63.7
Sahiwal (N=219)	217	99.1	218	99.5	211	96.3	202	92.2	214	97.7	205	93.6	194	88.6	188	85.8	177	80.8
Toba Tek Singh (N=223)	207	92.8	213	95.5	209	93.7	199	89.2	205	91.9	193	86.5	185	83.0	169	75.8	159	71.3
Vehari (N=214)	207	96.7	209	97.7	209	97.7	208	97.2	209	97.7	206	96.3	205	95.8	207	96.7	203	94.9

Districts	BCG		OPV-1		OPV-2		OPV-3		DPT-1		DPT-2		DPT-3		MEASLES		Proportion 'fully' vaccinated*	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
Gujranwala (N=214)	190	88.8	190	88.8	184	86.0	173	80.8	180	84.1	171	79.9	161	75.2	153	71.5	145	67.8
Hafizabad (N=220)	196	89.1	198	90.0	187	85.0	180	81.8	190	86.4	178	80.9	174	79.1	153	69.5	151	68.6
Kasur (N=229)	211	92.1	212	92.6	197	86.0	172	75.1	200	87.3	176	76.9	151	76.9	138	60.3	123	53.7
Lahore Rural (N=205)	178	86.8	188	91.7	180	87.8	164	80.0	182	88.8	169	82.4	149	72.7	132	64.4	123	60.0
Lahore urban (N=191)	183	95.8	183	95.8	178	93.2	169	88.5	183	95.8	175	91.6	167	87.4	158	82.7	155	81.2
Narowal (N=208)	190	91.3	191	91.8	184	88.5	176	84.6	189	90.9	179	86.1	173	83.2	141	67.8	132	66.8
Okara (N=204)	157	77.0	163	79.9	157	77.0	142	69.6	151	74.0	138	67.6	125	61.3	118	57.8	101	49.5
Sheikhupura (N=199)	189	95.0	191	96.0	190	95.5	177	88.9	189	95.0	185	93.0	171	85.9	152	76.4	146	73.4
Sialkot (N=203)	194	95.6	193	95.1	188	92.6	178	87.7	185	91.1	179	88.2	170	83.7	160	78.8	156	76.8
Bahawalnagar (N=211)	187	88.6	177	83.9	163	77.3	149	70.6	165	78.2	154	73.0	139	65.9	134	63.5	121	57.3
Bahawalpur (N=206)	192	93.2	179	86.9	160	77.7	149	72.3	172	83.5	160	77.7	147	71.4	126	61.2	120	58.3
Dera Ghazi Khan (N=207)	194	93.7	191	92.3	177	85.5	153	73.9	191	92.3	177	85.5	150	72.5	141	68.1	139	67.1
Lodhran (N=209)	196	93.8	186	89.0	180	86.1	173	82.8	184	88.0	177	84.7	170	81.3	171	81.8	168	80.4
Multan (N=216)	212	98.1	209	96.8	205	94.9	202	93.5	206	95.4	205	94.9	202	93.5	200	92.6	199	92.1
Muzaffargarh (N=217)	185	85.3	178	82.0	168	77.4	149	68.7	166	76.5	156	71.9	137	63.1	136	62.7	126	58.1
Rahim Yar Khan (N=222)	201	90.5	201	90.5	193	86.9	188	84.7	187	84.2	181	81.5	176	79.3	160	72.1	157	70.7
Rajan Pur (N=209)	137	65.6	140	67.0	114	54.5	86	41.1	120	57.4	98	46.9	74	35.4	68	32.5	60	28.7
Total	6744	91.5	6768	91.8	6461	87.6	6028	81.8	6557	88.9	6201	84.1	5758	78.5	5420	73.5	5169	70.1

* 'Fully vaccinated' means that the children were covered with BCG, three doses of OPV and DPT followed by Measles vaccination, irrespective of the age of vaccination. The evidence of vaccination was provided by the dates on the cards and by history.

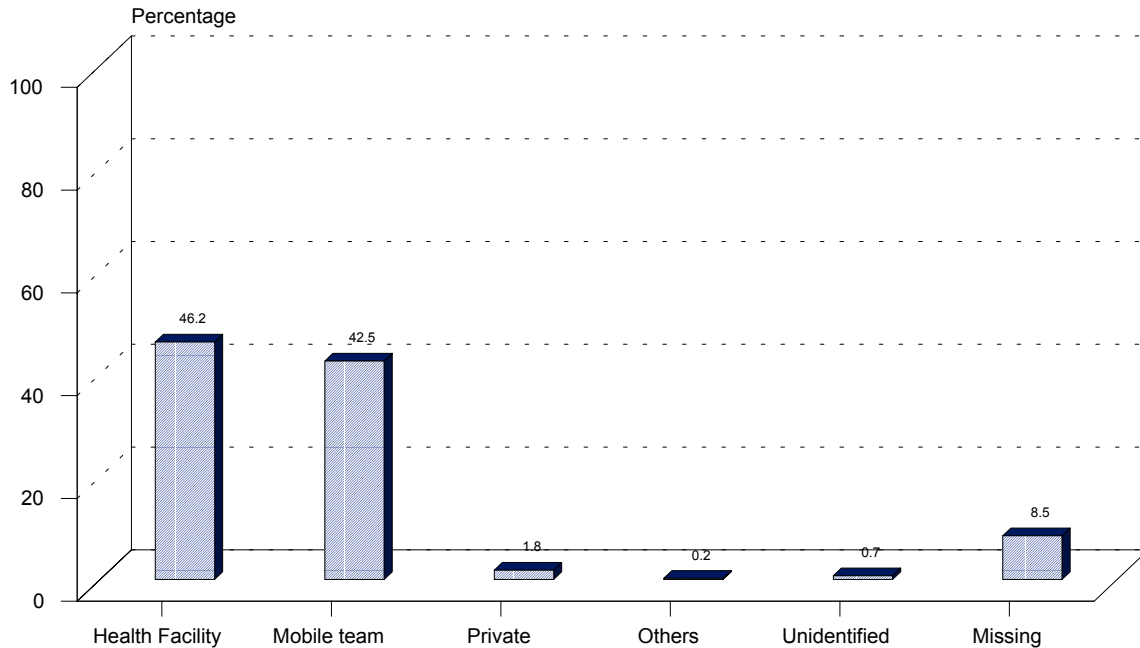


Fig 12. The sources for BCG vaccination as identified by the cards and on history

For BCG, a coverage of 91.5% was seen which varied between 65.6 in Rajan Pur and 99.1% in Sahiwal. Okara had a BCG coverage of 77%. Twenty-six of the 34 districts plus Lahore rural had more than 90% immunization coverage for BCG (Table 1).

For OPV 1, the overall coverage was 91.8% with Rajan Pur showing 67% coverage as opposed to Khushab and Gujrat showing 98% coverage. Sahiwal has shown a coverage of 99.5%. Similarly, for OPV 2 and OPV 3, Rajan Pur had the lowest coverage of 55 and 41%. The proportion of children vaccinated with DPT varied from 89% to 79% for the three doses. Vehari, Sahiwal and Multan have the highest proportion of children vaccinated with three doses of DPT whereas, Rajan Pur district had the lowest proportion of children vaccinated with DPT. Measles immunization was more than 90% complete in Vahari and Multan (97% and 93%, respectively). In 14 out of 35 districts the coverage for Measles vaccination was less than 70% (Table 1).

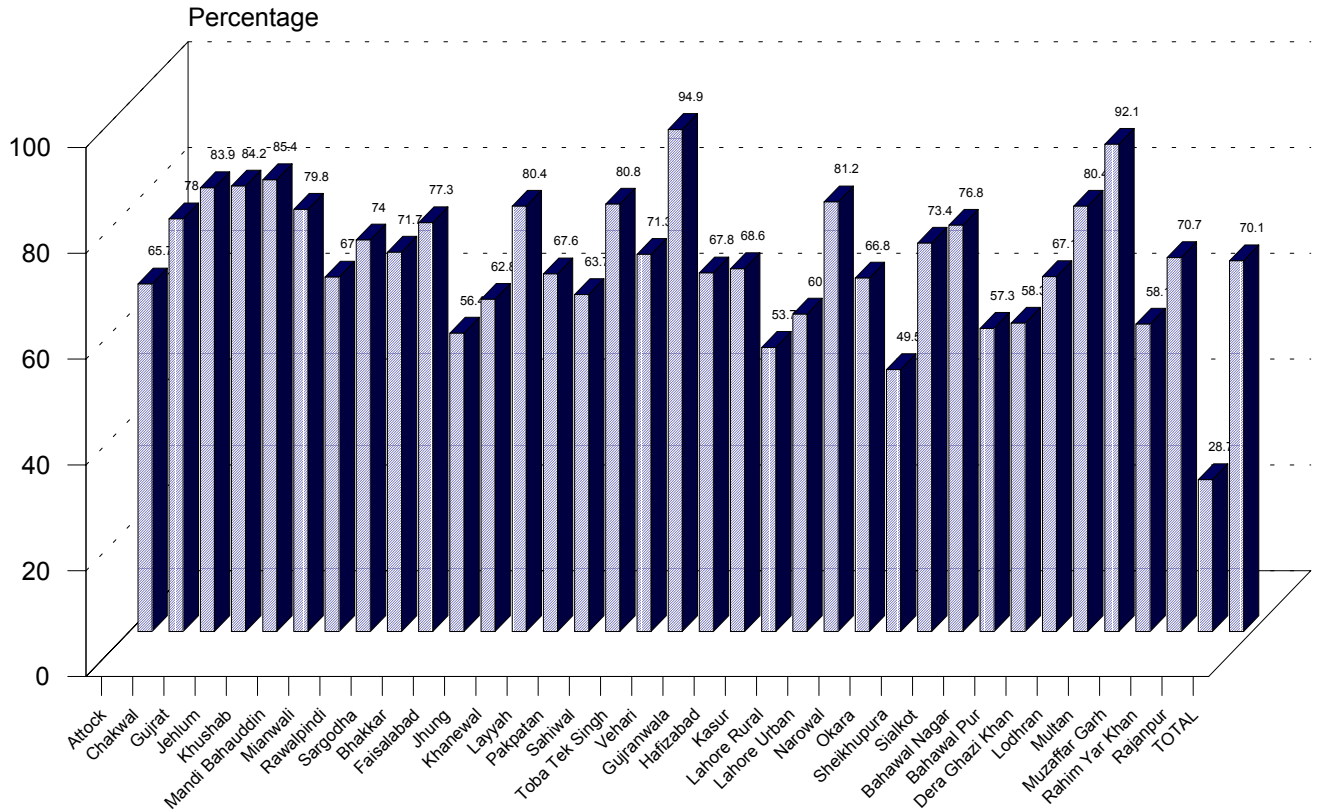


Fig 13. Proportion of children 'fully vaccinated' i.e. had all the antigens irrespective of age of the child.

The last column shows 'fully vaccinated' indicating the proportion of children completing the immunization schedule i.e., BCG, three doses of OPV and DPT and Measles, without considering the age at vaccination. The highest proportion shown was in Vehari (95%) and Multan (92%) and the lowest was again in Rajan Pur (28.7 %) although the overall completed vaccination coverage was 70% (Table 1 and Fig 13).

Vaccination coverage using information from the cards (dates) only Table 3 shows the vaccination coverage, on confirmation from the dates had fallen to 44% for BCG, between 40-43% for 3 doses of OPV and DPT and to 36% for Measles vaccination. Poorest coverage was in Rajan Pur (4-8%) and the highest in Vehari, Bhakkar, Khushab and Multan (60% and more). Rest of the districts showed a coverage lower than 60% for all the antigens.

Table 3. Immunization coverage as determined by the presence of cards (dates) mentioned for different doses of the antigens by Districts.

Districts	BCG		OPV-1		OPV-2		OPV-3		DPT-1		DPT-2		DPT-3		MEASLES	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Attock (N=210)	89	42.2	89	42.4	83	39.5	84	37.1	88	41.9	83	39.5	77	36.7	66	31.4
Chakwal (N=205)	118	57.6	122	59.5	121	59.0	119	58.0	122	59.5	120	58.5	118	57.6	110	53.7
Gujrat (N=218)	93	42.7	92	42.2	91	41.7	89	40.8	93	42.7	92	42.2	90	41.3	83	38.1
Jhelum (N=203)	112	55.2	111	54.7	110	54.2	107	52.7	111	54.7	110	54.2	106	52.2	104	51.2
Khushab (N=213)	134	62.9	135	63.4	129	60.6	127	59.6	135	63.4	129	60.6	127	59.6	120	56.3
Mandi Bahaud Din (N=213)	88	41.3	89	41.8	83	39.0	83	39.0	89	41.8	83	39.0	83	39.0	76	35.7
Mianwali (N=188)	98	52.1	95	50.5	88	46.8	82	43.6	95	50.5	88	46.8	82	43.6	73	38.8
Rawalpindi (N=192)	71	37.0	72	37.5	66	34.4	63	32.8	71	37.0	67	34.9	66	34.4	51	26.6
Sargodha (N=205)	109	53.2	105	51.2	101	49.3	89	43.4	105	51.2	101	49.3	89	43.4	77	37.6
Bhakkar (N=207)	138	66.7	143	69	139	67.1	134	64.7	142	68.6	139	67.1	135	65.2	125	60.4
Faisalabad (N=227)	135	59.5	135	59.9	127	55.9	116	51.1	136	59.9	127	55.9	116	51.1	105	46.3
Jhung (N=215)	96	44.7	97	45.1	89	41.4	85	39.5	95	44.2	87	40.5	82	38.1	76	35.3
Khanewal (N=219)	144	65.8	145	66.2	141	64.4	133	60.7	145	66.2	140	63.9	131	59.8	124	56.6
Layyah (N=216)	135	62.5	134	62.0	128	59.3	121	56.0	134	62.0	126	58.3	121	56.0	117	54.2
Pakpattan (N=215)	73	34.0	76	35.3	69	32.1	67	31.2	76	35.3	70	32.6	67	31.2	66	30.7
Sahiwal (N=219)	87	39.7	88	40.2	86	39.3	82	37.4	88	40.2	86	39.3	82	37.4	74	33.8
Toba Tek Singh (N=223)	129	57.8	127	57.0	126	56.5	122	54.7	127	57.0	125	56.1	122	54.7	109	48.9
Vehari (N=214)	132	61.7	133	62.1	131	61.2	129	60.3	133	62.1	131	61.2	129	60.3	129	60.3

Districts	BCG		OPV-1		OPV-2		OPV-3		DPT-1		DPT-2		DPT-3		MEASLES	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Gujranwala (N=214)	91	42.5	89	41.6	86	40.2	80	37.4	89	41.6	86	40.2	79	36.9	70	32.7
Hafizabad (N=220)	57	25.9	59	26.8	56	25.5	54	24.5	60	27.3	57	25.9	54	24.5	46	20.9
Kasur (N=229)	65	28.4	66	28.8	57	24.9	54	23.6	66	28.8	59	25.8	54	23.6	45	19.7
Lahore Rural (N=205)	54	26.3	56	27.3	54	26.3	52	25.4	56	27.3	54	26.3	52	25.4	43	21.0
Lahore urban (N=191)	76	39.8	79	41.4	73	38.2	65	34.0	78	40.8	72	37.7	65	34.0	62	32.5
Narowal (N=208)	69	33.2	69	33.2	68	32.7	65	31.3	70	33.7	67	32.2	65	31.3	51	24.5
Okara (N=204)	47	23.0	46	22.5	41	20.1	38	18.6	47	23.0	42	20.6	37	18.1	32	15.7
Sheikhupura (N=199)	84	42.2	85	42.7	85	42.7	81	40.7	84	42.2	83	41.7	77	38.7	65	32.7
Sialkot (N=203)	94	46.3	95	46.8	93	45.8	88	43.3	94	46.3	92	45.3	86	42.4	78	38.4
Bahawalnagar (N=211)	86	40.8	88	41.7	84	39.8	77	36.5	85	40.3	81	38.4	73	34.6	66	31.3
Bahawalpur (N=206)	82	39.8	80	38.8	72	35.0	67	32.5	78	37.9	70	34.0	64	31.1	58	28.2
Dera Ghazi Khan (N=207)	47	22.7	47	22.7	42	20.3	39	18.8	47	22.7	41	19.8	39	18.8	37	17.9
Lodhran (N=209)	85	40.7	86	41.1	79	37.8	76	36.4	83	39.7	78	37.3	76	36.4	67	32.1
Multan (N=216)	133	61.6	133	61.6	132	61.1	130	60.2	133	61.6	132	61.1	130	60.2	124	57.4
Muzaffargarh (N=217)	77	35.5	75	34.6	70	32.3	65	30.0	74	34.1	69	31.8	63	29.0	55	25.3
Rahim Yar Khan (N=222)	94	42.5	93	41.9	88	39.6	85	38.3	92	41.4	87	39.2	84	37.8	73	32.9
Rajan Pur (N=209)	17	8.1	17	8.1	12	5.7	8	3.8	17	8.1	12	5.7	9	4.3	12	5.7
Total (N=7372)	3239	43.9	3252	44.1	3100	42.1	2950	40.0	3238	43.9	3086	41.9	2930	39.7	2669	36.2

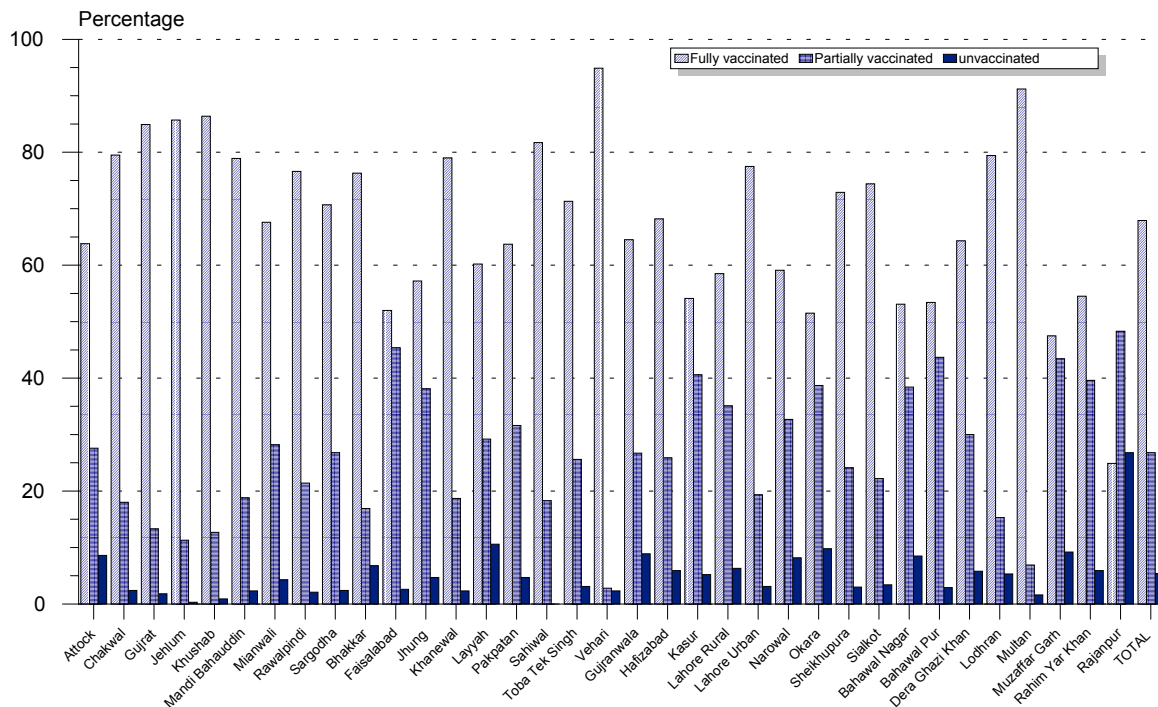


Fig 14. Immunization Status of the children shown by district: Fully, partially and unvaccinated categories are shown.

Immunization status of the children Fig 14 indicates that 68% of the children were fully vaccinated, 26.8% were partially vaccinated while only 5.4% of the children remained unvaccinated on the whole. The highest proportion of fully vaccinated children was reported from Vehari (94.9%) and Multan (91.2%); partially vaccinated children were highest in Rajan Pur (48.3%) followed by Faisalabad (45%), Muzaffargarh and Bahawalpur (44%). Twenty-seven percent of the children remained unvaccinated in Rajan Pur, followed by Okara and Layyah (10%).

Immunization status before one year of age Fig 15 shows the proportion of children completed vaccination before they were one year of age. In Khushab and Vehari, 51.2% and 50%, respectively, were fully immunized before one year of age. Multan and Jhelum followed closely (45%). While Rajan Pur showed a proportion of only 3% that was fully immunized before one year of age.

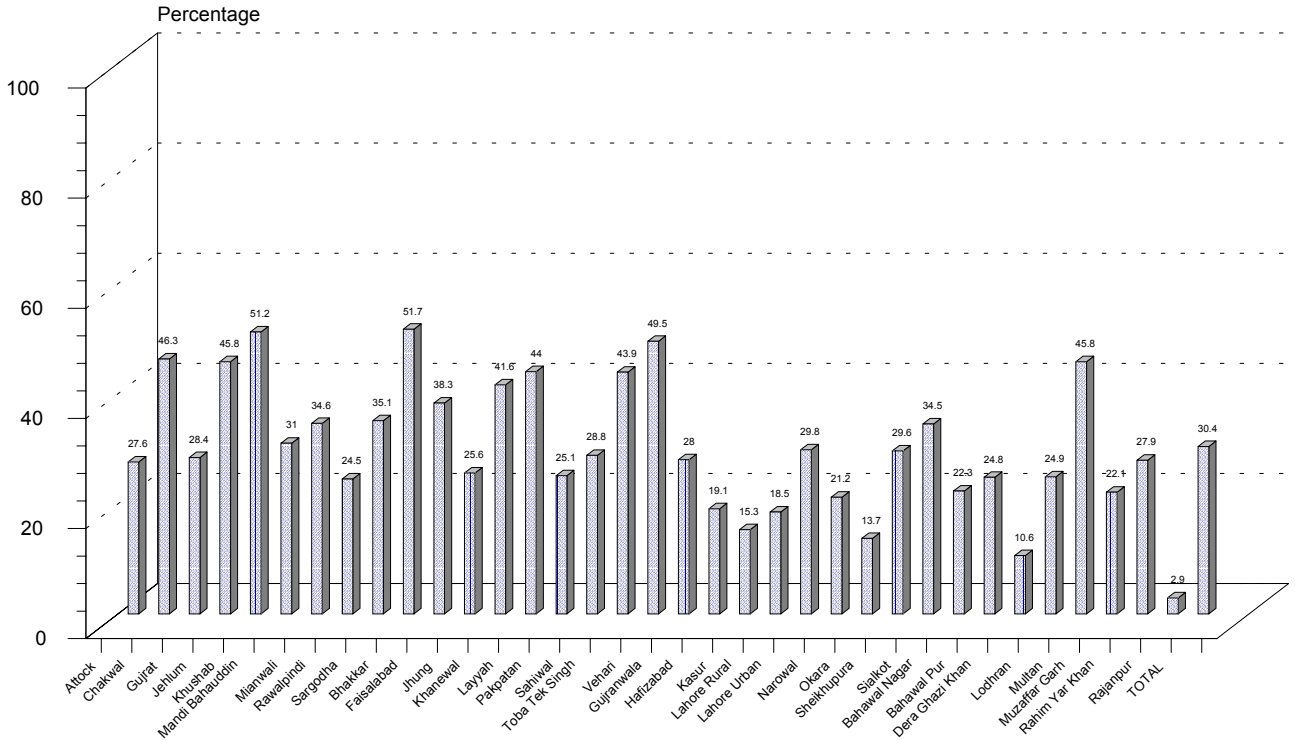


Fig 15. The proportion of children 'Fully Immunized' before 1 year of age by district

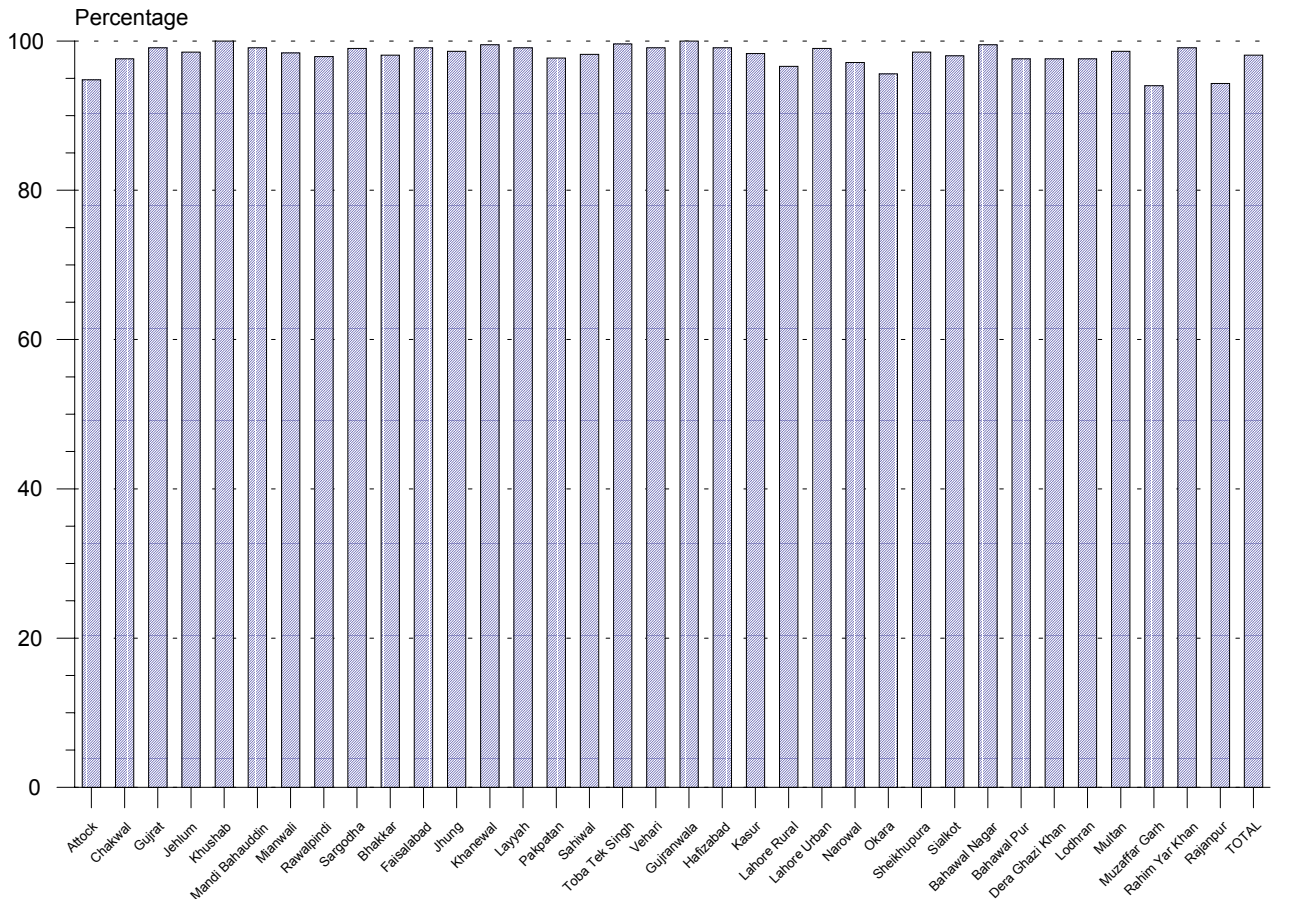


Fig 16. Coverage during Sub National Immunization Days (1st Round)

National Immunization Days (Sub National Immunization Days (NID/SNIDs))

During the interviews, questions were asked from the mothers if they had oral Polio drops given to their children during the subnational immunization days which concluded recently on the 30th of June, 2000. Fig 16 shows that on the whole the coverage in Punjab was 98% (7233 out of 7372) children got their first dose while 92.3% also had their second dose of OPV alongwith Vitamin A (Fig 17).

In the districts, Rajan Pur, Layyah and Attock SNID coverage reported for 2nd dose with Vitamin A was the lowest (81-84%, Fig 17).

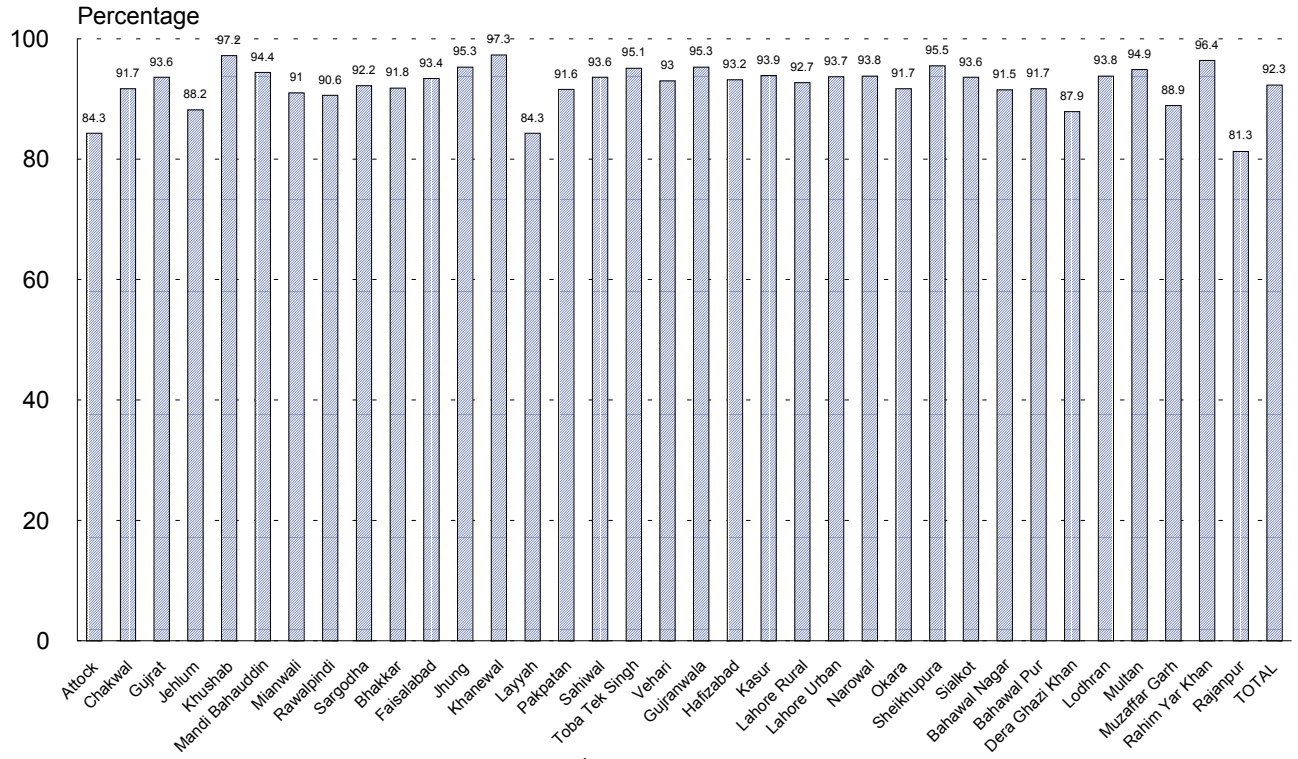


Fig 17. Coverage during the sub national immunization (2nd Round – Polio + Vit A).

Crash program The crash program was launched to clear the backlog of unimmunized children in the target age group. The duration of this program extended from July 1999 till October 1999. During this period, we also expected the routine immunization to be carried out as usual. Thus, to identify the children who benefited from this crash program, we needed to carefully select the subset of population of children who had cards available, and missed their opportunity for vaccination.

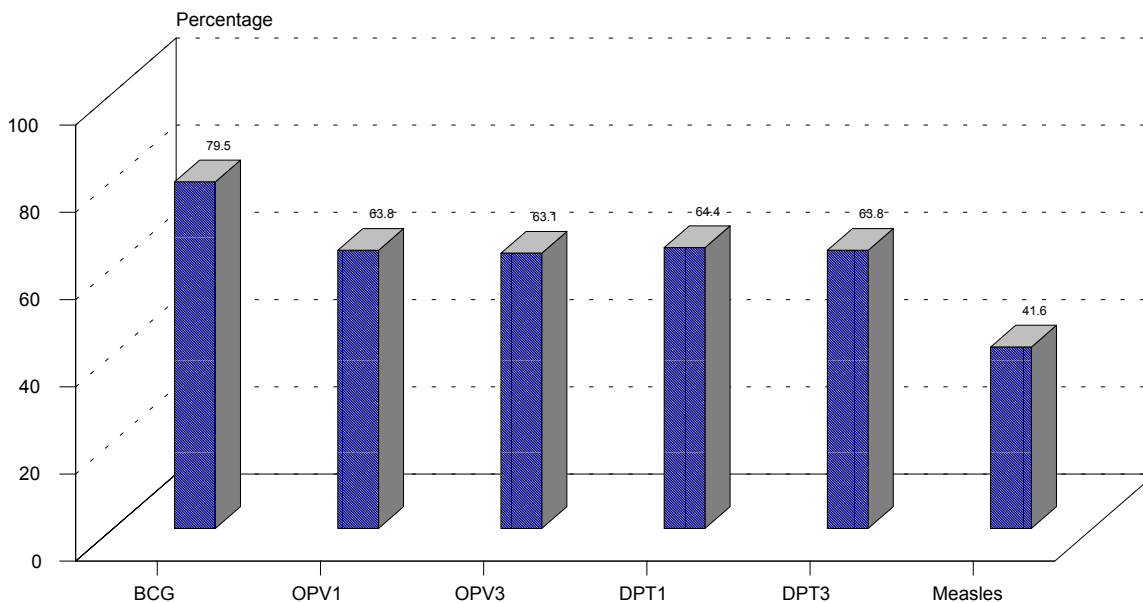


Fig 18. Vaccination coverage (%) during the Crash Program (July -Oct 1999) for BCG, OPV, DPT and Measles.

Among those who had immunization cards (n= 3450), the number of children vaccinated with BCG during the 'Crash' period was 789. Out of this, 627 (79.5) benefited from the crash program for BCG vaccination when we considered their age at vaccination at least one month outside the recommended age for BCG vaccination. For OPV first dose, out of 899 children, 574 (63.8%) of the children were immunized giving a margin of one month after the due age of vaccination i.e., 2 months. For OPV third dose, out of 1175 children who missed their third dose, 741 (63%) benefited. For DPT first and third doses, nearly 64% of the children were vaccinated outside the routine immunization. For measles, 41.6% (381 out of 916) of the children vaccinated during this 'crash' period were those who had missed their opportunity in routine (Table 6). Thus crash program seems to have covered a large number of 'missed opportunities' and had increased the proportion of children fully vaccinated as a whole (Fig 18).

Table 6. *Immunization coverage of children during the CRASH program during July 1999 till Oct 1999 launched in Punjab. The subset of children selected for this evaluation are those who possessed cards with dates and had vaccination within this time period for antigens which were given at ages outside the current immunization schedule. Thus, BCG vaccination was considered as late if given after one month, OPV-1 and DPT-1 after 3 months, OPV-3 and DPT-3 after 5 months and measles vaccination after 10 months.*

Children vaccinated			
<i>during the CRASH program</i>		<i>after the due vaccination time</i>	
Vaccines	n	n	%
BCG	789	627	79.5
OPV-1	899	574	63.8
OPV-3	1175	741	63.1
DPT-1	925	596	64.4
DPT-3	1180	753	63.8
MEASLES	916	381	41.6

Maternal Vaccination was determined by the number of Tetanus Toxoid (TT) vaccinations the mother had. The duration from vaccination was also calculated to determine if the child was protected against Neonatal Tetanus. The presence of cards was important to confirm vaccination although a clear history was taken as a positive indicator for immunization. In later cases, protection of child could not be ascertained and hence the proportion of children protected against Neonatal Tetanus may have been under estimated.

The average number of households that were visited to identify a mother with child 0- 11 months of age was between 9 to 10.

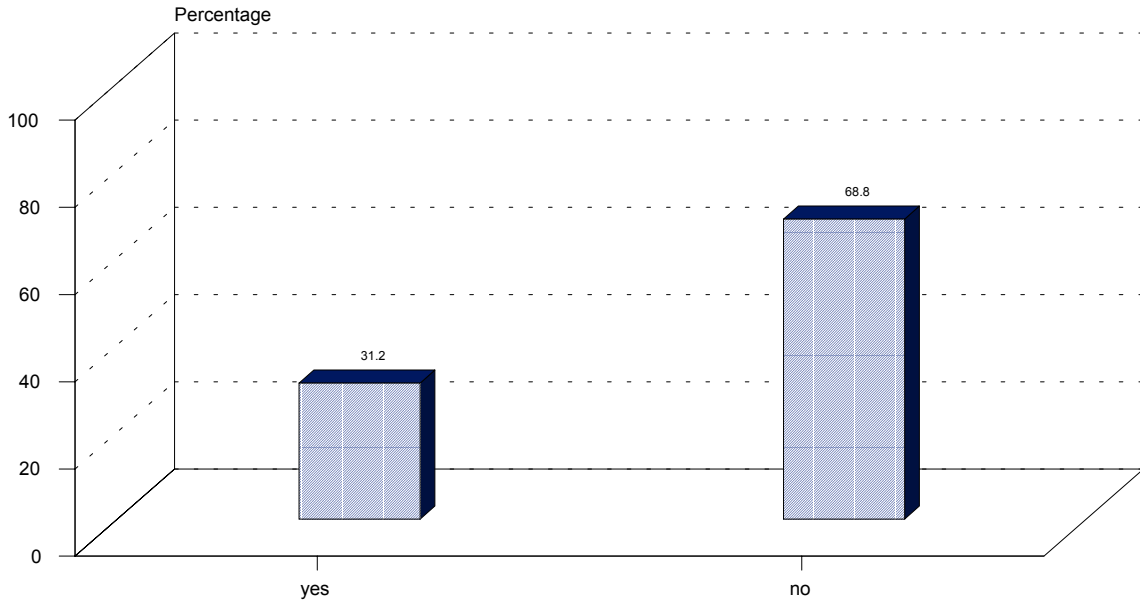


Fig 19. The proportion of mothers showing their OWN immunization cards

Presence of cards with the mothers for their own vaccination is depicted in Fig 19. Only 31% of the mothers could show a vaccination card for themselves. The source of TT vaccination was mainly the health facility (more than 60%) for all the five doses of TT. The private clinics had a small role to provide TT vaccination to the mothers (5-6%). An unidentified source is also recorded which indicates that more than 30% of the mothers get their vaccination from outside the health facilities mentioned (Fig 20). Since the vaccination coverage included both immunization confirmed on cards and by a positive maternal history of her vaccination, the undefined source could not be identified. The mobile teams, though played an active role in childhood immunizations, had very little to do regarding the vaccination coverage of the mothers. It can be related much to the existing constraints of our society.

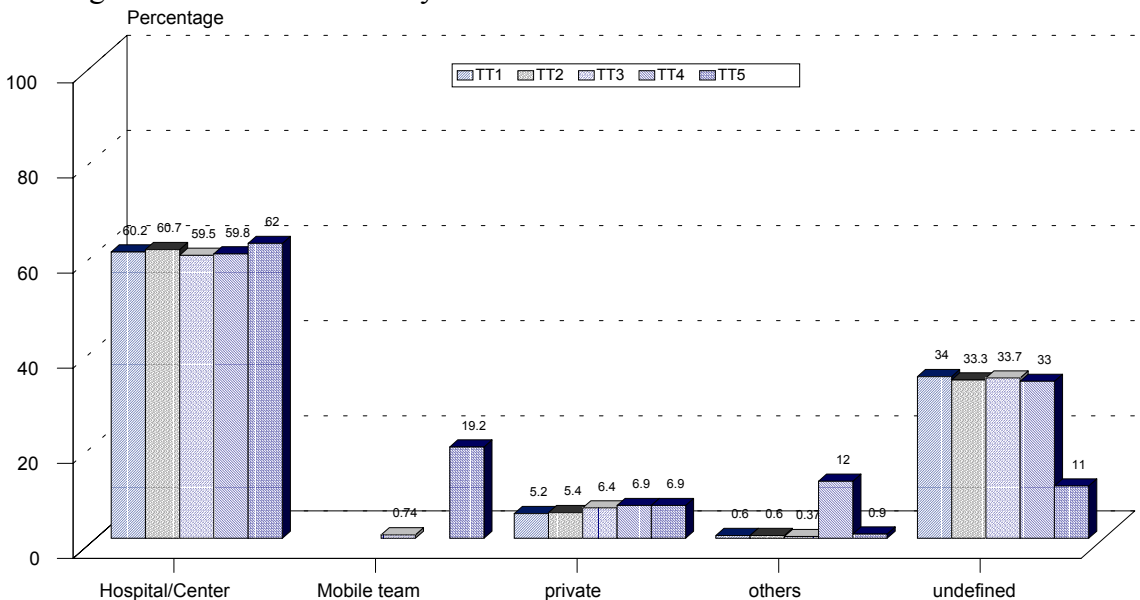


Fig 20. Proportion of mothers vaccinated for different doses of TT by various health facilities.

Vaccination Coverage of Mothers Table 4 shows the vaccination coverage by districts for the mothers by the number of doses of TT received as evidenced by the presence of cards or confirmed on history. The last column shows the proportion of mothers with a total of 5 doses of TT. For TT-1 and TT-2, which can provide protection to a child within 3 years time period, Khushab (76%), Lahore urban (84%) and Sialkot (82%) districts showed the highest coverage. Seventeen out of the rest of the 32 (Lahore has been counted as two districts i.e., Rural and Urban, it is why total there are 35 districts in Punjab instead of 34 districts) districts showed a coverage of more than fifty percent. On the whole, the coverage with two doses of TT came up to 63%. However, the coverage for three doses came down to 18% and for fourth dose it came as low as 5%. The coverage with a total of 5 doses of TT vaccination was as low as 5% for all the districts. Sheikhpura (12%), Lahore urban (11%) and Gujranwala (10%) showed a coverage of 10% or more. Rest of the districts were lower (0-7%) (Table 4). The difference in coverage for TT-1 and TT-5 is shown in Fig 21 where TT-1 is given to 69% of the mothers and TT-5 to only 5% of them.

Table 4. Maternal Immunization as determined by the presence of cards and history of different doses of the antigen by Districts.

Districts	TT-1		TT-2		TT-3		TT-4		TT-5		5 Doses of TT	
	n	%	n	%	n	%	n	%	n	%		
Attock (N=215)	136	63.3	128	59.5	36	14.9	20	9.3	16	7.4	16	7.4
Chakwal (N=204)	139	68.1	134	65.7	34	16.7	12	5.9	10	4.9	10	4.9
Gujrat (N=218)	169	77.5	144	66.1	36	16.5	12	5.5	10	4.6	10	4.6
Jhelum (N=201)	156	77.6	140	69.7	34	16.9	9	4.5	4	2.0	4	2.0
Khushab (N=221)	179	81.0	168	76.0	61	27.8	33	14.9	18	8.1	17	7.7
Mandi BahaudDin (N=227)	133	58.6	125	55.1	34	15.0	8	3.5	6	2.6	6	2.6
Mianwali (N=190)	141	74.2	130	68.4	39	20.5	12	6.3	4	2.1	4	2.1
Rawalpindi (N=190)	146	76.8	137	72.1	51	26.8	29	15.3	18	9.5	18	9.5
Sargodha (N=208)	165	79.3	146	70.2	56	26.9	17	8.2	9	4.3	9	4.3
Bhakkar (N=222)	173	77.9	165	74.3	44	19.8	22	9.9	11	5.0	11	5.0
Faisalabad (N=228)	136	59.6	113	49.6	26	11.4	13	5.7	9	3.9	9	3.9
Jhung (N=219)	104	47.5	94	42.9	21	9.6	8	3.7	7	3.2	7	3.2
Khanewal (N=228)	169	74.1	162	71.1	30	13.2	11	4.8	4	1.8	4	1.8
Layyah (N=222)	151	68.0	140	63.1	24	10.8	5	2.3	1	0.5	1	0.5
Pakpattan (N=212)	105	49.5	88	41.5	13	6.1	3	1.4	0	0.0	0	.00
Sahiwal (N=213)	144	67.6	131	61.5	36	16.9	11	5.2	5	2.3	5	2.3
Toba Tek Singh (N=232)	126	54.3	111	47.8	25	10.8	10	4.3	4	1.7	4	1.7

Districts	TT-1		TT-2		TT-3		TT-4		TT-5		5 Doses of TT	
	n	%	n	%	n	%	n	%	n	%		
Vehari (N=217)	165	76.0	156	71.9	22	10.1	5	2.3	1	0.5	1	0.5
Gujranwala (N=206)	156	75.7	148	71.8	51	24.8	25	12.1	21	10.2	21	10.2
Hafizabad (N=209)	146	69.9	126	60.3	38	18.2	9	4.3	4	1.9	4	1.9
Kasur (N=221)	141	63.8	122	55.2	46	20.8	18	8.1	11	5.0	11	5.0
Lahore Rural (N=196)	118	60.2	106	54.1	38	19.4	20	10.2	18	9.2	18	9.2
Lahore Urban (N=197)	173	87.8	165	83.8	49	24.9	27	13.7	21	10.7	21	10.7
Narowal (N=205)	153	74.6	139	67.8	31	15.1	8	3.9	4	2.0	4	2.0
Okara (N=217)	133	61.3	115	53.0	47	21.7	18	8.3	12	5.5	12	5.5
Sheikhupura (N=211)	166	78.7	148	70.1	55	26.1	35	16.6	26	12.3	26	12.3
Sialkot (N=212)	184	86.8	173	81.6	41	19.3	10	4.7	3	1.4	3	1.4
Bahawalnagar (N=206)	127	61.7	109	52.9	33	16.0	13	6.3	8	3.9	8	3.9
Bahawalpur (N=208)	135	64.7	118	56.7	38	18.3	4	1.9	2	1.0	2	1.0
Dera Ghazi Khan (N=203)	153	75.4	128	63.1	37	18.2	14	6.9	6	3.0	6	3.0
Lodhran (N=213)	141	66.2	118	55.4	30	14.1	10	4.7	10	4.7	10	4.7
Multan (N=215)	167	77.7	157	73.0	34	15.8	10	4.7	4	1.9	4	1.9
Muzaffargarh (N=215)	144	67.0	136	62.8	63	29.3	24	11.2	16	7.4	16	7.4
Rahim Yar Khan (N=222)	170	78.3	158	72.8	50	23.0	25	11.5	21	9.7	21	9.7
Rajan Pur (N=203)	90	44.3	83	40.9	45	22.2	23	11.3	21	10.3	18	8.9
Total (N=7421)	5134	69.2	4660	62.8	1348	18.2	534	7.2	345	4.6	341	4.6

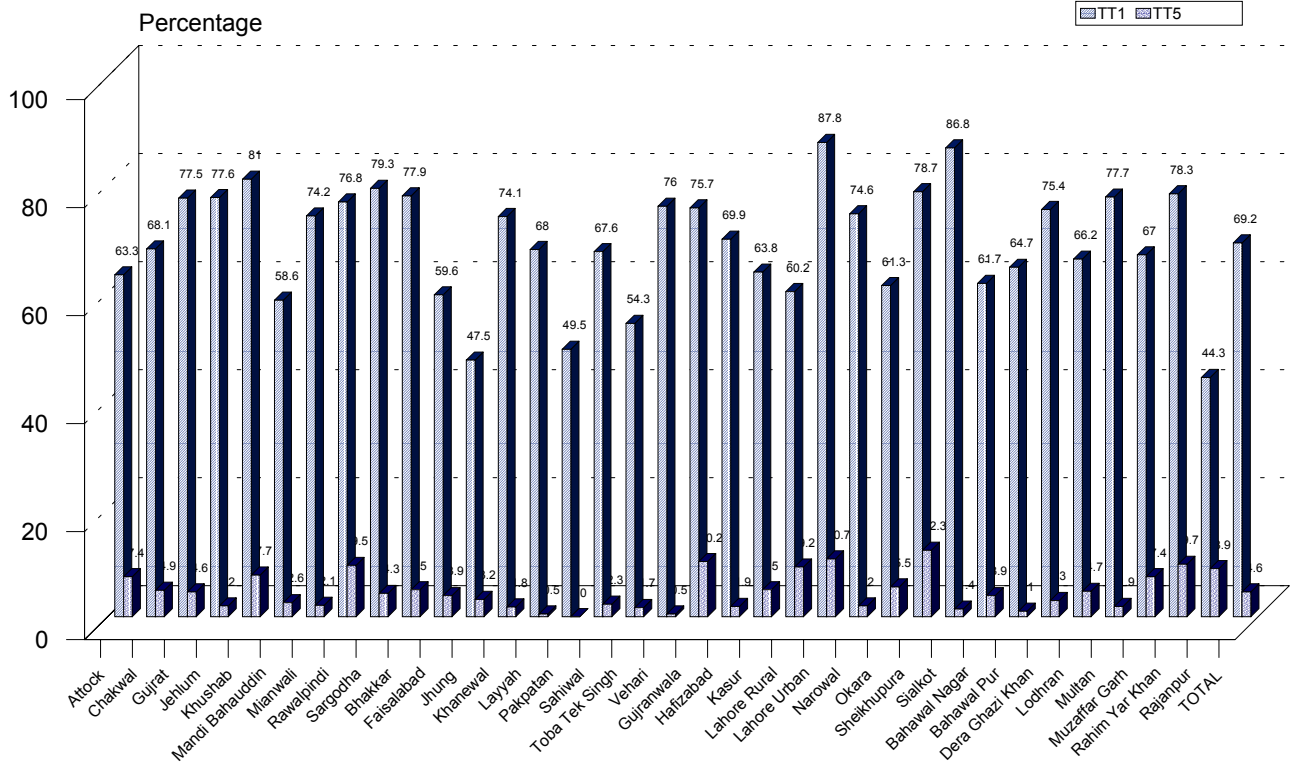


Fig 21. Proportion (%) of mothers vaccinated with TT-1 and TT-5 on cards and history of immunization by district

Immunization coverage by presence of cards only is shown in Table 5. The coverage for two doses of tetanus toxoid was only 19% and was less than 1% for all the five doses.

Table 5. *Maternal Immunization as determined by the presence of cards (dates) only for different doses of Tetanus antigen by Districts.*

Districts	TT-1		TT-2		TT-3		TT-4		TT-5	
	n	%	n	%	n	%	n	%	n	%
Attock (N=215)	30	14.0	28	13.0	4	1.9	2	0.9	16	7.4
Chakwal (N=204)	81	39.7	82	40.2	10	4.9	2	1.0	1	0.5
Gujrat (N=218)	37	17.0	35	16.1	36	16.5	12	5.5	10	4.6
Jhelum (N=201)	42	20.9	37	18.4	9	4.5	3	1.5	1	0.5
Khushab (N=221)	85	38.5	77	34.8	26	11.8	19	8.6	7	3.2
Mandi BahaudDin (N=227)	28	12.3	27	11.9	10	4.4	2	0.9	6	2.6
Mianwali (N=190)	76	40.0	67	35.3	25	13.2	11	5.8	3	1.6
Rawalpindi (N=190)	21	11.1	21	11.1	1	0.5	1	0.5	18	9.5
Sargodha (N=208)	66	31.7	58	27.9	14	6.7	5	2.4	3	1.4
Bhakkar (N=222)	105	47.3	102	45.9	28	12.6	17	7.7	9	4.1
Faisalabad (N=228)	34	14.9	27	11.8	4	1.8	2	0.9	1	0.4
Jhung (N=219)	30	13.7	30	13.7	3	1.4	1	0.5	2	0.9
Khanewal (N=228)	44	19.3	40	17.5	7	3.1	2	0.9	1	0.4
Layyah (N=222)	66	29.7	64	28.8	4	1.8	2	0.9	1	0.5
Pakpattan (N=212)	27	12.7	19	9.0	1	0.5	1	0.5	0	0.0
Sahiwal (N=213)	24	11.3	22	10.3	2	0.9	1	0.5	1	0.5
Toba Tek Singh (N=232)	31	13.4	26	11.2	3	1.3	2	0.9	4	1.7

Districts	TT-1		TT-2		TT-3		TT-4		TT-5	
	n	%	n	%	n	%	n	%	n	%
Vehari (N=217)	59	27.2	56	25.8	6	2.8	3	1.4	1	0.5
Gujranwala (N=206)	46	22.3	44	21.4	7	3.4	2	1.0	21	10.2
Hafizabad (N=209)	29	13.9	28	13.4	6	2.9	9	4.3	4	1.9
Kasur (N=221)	26	11.8	21	9.5	8	3.6	3	1.4	1	0.5
Lahore Rural (N=196)	36	18.4	31	13.8	6	3.1	1	0.5	2	1.0
Lahore Urban (N=197)	28	14.2	26	13.2	4	2.0	1	0.5	2	1.0
Narowal (N=205)	42	20.5	41	20.0	3	1.5	0	0.00	4	2.0
Okara (N=217)	35	16.1	30	13.8	10	4.6	18	8.3	1	0.5
Sheikhupura (N=211)	47	22.3	39	18.5	9	4.3	8	3.8	6	2.8
Sialkot (N=212)	55	25.9	53	25.0	6	2.8	2	0.9	1	0.5
Bahawalnagar (N=206)	34	16.5	33	16.0	6	2.9	3	1.5	1	0.5
Bahawalpur (N=208)	40	19.2	37	17.8	11	5.3	4	1.9	2	1.0
Dera Ghazi Khan (N=203)	18	8.9	14	6.9	3	1.5	1	0.5	1	0.5
Lodhran (N=213)	43	20.2	41	19.2	1	0.5	1	0.5	1	0.5
Multan (N=215)	78	36.3	73	34.0	10	4.7	5	2.3	2	0.9
Muzaffargarh (N=215)	17	7.9	15	7.0	2	0.9	24	11.2	16	7.4
Rahim Yar Khan (N=222)	100	46.1	93	42.9	24	11.1	6	2.8	4	1.8
Rajan Pur (N=203)	1	0.5	1	0.5	1	0.5	23	11.3	21	10.3
Total (N=7421)	1561	21.0	1438	19.4	274	3.7	109	1.5	52	0.7

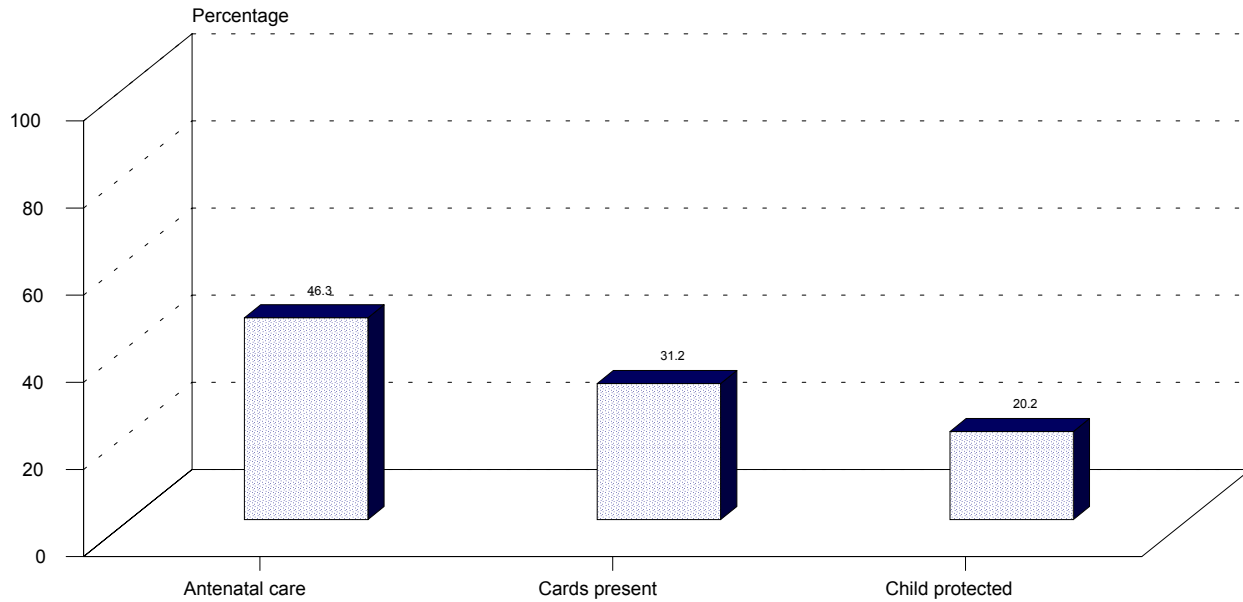


Fig 22. Shows the proportion of mothers getting some antenatal care, having cards and the child protected through TT vaccinations.

Proportion of children protected against Tetanus Neonatorum The duration from the last dose of TT was calculated which showed that this protection was only provided to 20% of the newborns (Fig 22) keeping in view the fact that nearly 46% of the mother got some kind of antenatal care and 31% had immunization cards to show. This information could only be derived from the immunization cards. Fig 23 shows the proportion of children protected by districts. Rahimyar Khan (37%) followed by Bhakkar (37%), Multan, Chakwal and Khushab each showed a protection by 33%. Rajanpur was the lowest showing only 1% of the children protected against Tetanus Neonatorum.

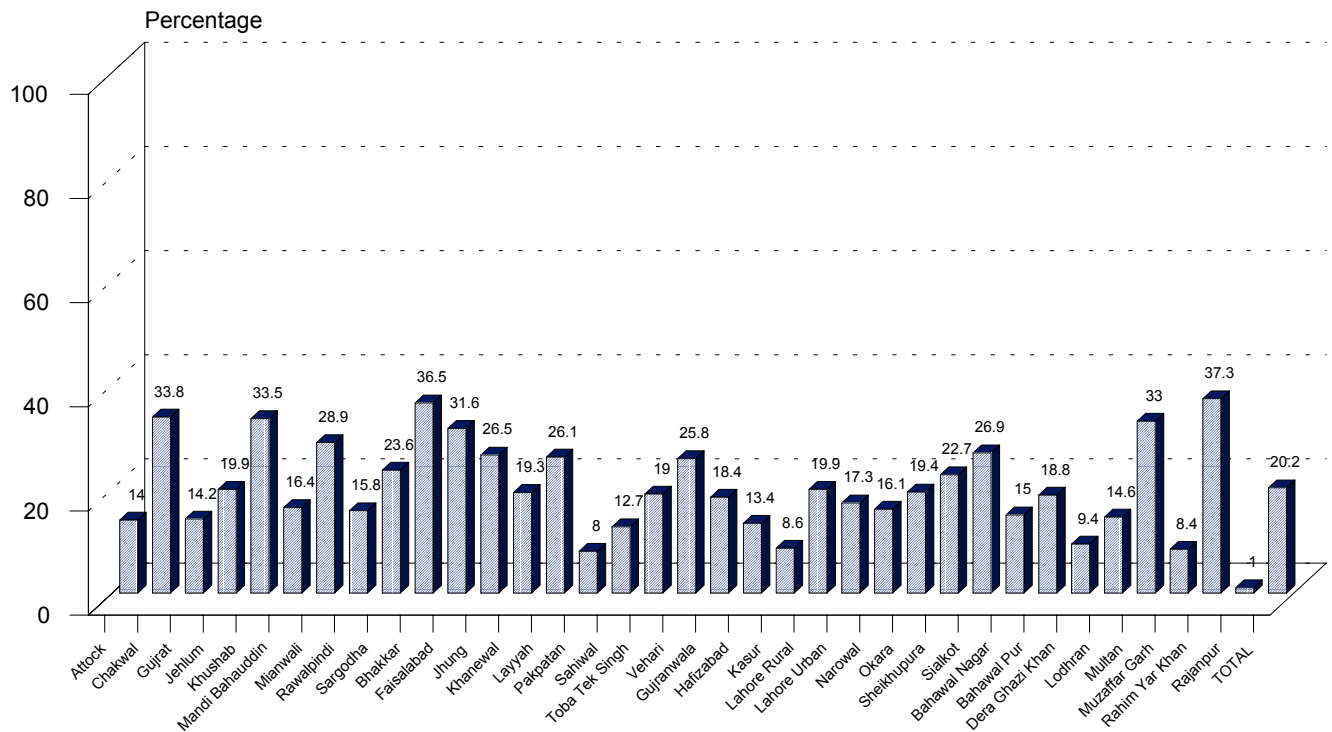


Fig 23. Duration following various doses of TT vaccination assessed as protecting the children by district.

These results show that the vaccination coverage for the children was encouraging and the crash program did help in clearing the missed vaccinations and improved upon the routine vaccinations, but the TT vaccination for mothers was far from satisfactory especially when some districts showed coverage less than even 10%.

b. District Coverage

The survey was focused to assess the district-wise coverage, the results of districts are discussed in following pages: Districts are arranged according to the divisions. In the end of each division the district comparisons of the respective division are also been discussed.

BAHAWALPUR DISTRICT

Vaccination Coverage by Antigens (Figure Bahawalpur-a):

In Bahawalpur, maximum coverage, as determined by entries on vaccination cards and where cards were not produced, by history was 93.2 % for BCG. (This was also verified by presence of scar) maximum coverage for measles was 61.2 %. Coverage of OPV dropped from 86.9 % to 72.3 % and that of DPT from 83.5 % to 71.4 % from 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 40 % for all antigens. Here again the maximum is for BCG (39.8 %) and minimum for measles (28.2 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 58.3 %.

Vaccination Coverage with Gender Breakup (Figure Bahawalpur- b, c, d)

From the results it appears that amongst the vaccinated children there is no significant difference between the males and females which indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. Maximum difference between male and female children was for OPV-2 where 81.4% of children were female and 74% were males. Gender difference was more marked if we see the results on the basis of vaccination cards only. Here again the differences were in favor of female children.

Coverage Comparison between Reported and Evaluated Figures (Figure Bahawalpur- e):

Except for OPV-3 and DPT-3 where reported coverage was 97 %, in all others vaccinations reported coverage was more than 100 %, with maximum of 119 % for BCG. On the other hand the figures on the basis of evaluation ranged from 61.2 % for measles to maximum of 93.2 % for BCG. On the basis of reported figures the coverage dropped from 106 to 97 % for OPV and from 86.9 to 72.3 % for evaluated figures. Similarly coverage dropped from 105 % to 97 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 83.5 % to 71.4 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Bahawalpur- f)

Total TT coverage of mothers (by history and card) in Bahawalpur district ranged from 64.9% for TT-1 to 1.0 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 19.2% for TT-1 to 0% for TT 5.

BAHAWALNAGAR DISTRICT

Vaccination Coverage by Antigens (Figure Bahawalnagar -a):

In Bahawalnagar district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 88.6 % for BCG. Minimum coverage was for measles, which was 63.5 %. Coverage of OPV-1 dropped from 83.9 % to 70.6 % for OPV-3 and that of DPT from 78.2 to 65.9 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 42 % for all antigens. However here, the maximum is for OPV-1 (41.7 %) and minimum for measles (31.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 57.3 %.

Vaccination Coverage with Gender Breakup (Figure Bahawalnagar - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more males being fully immunized (57.52 % male and 47.96% females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are also different (86.7 vs 80.6 for OPV-1; 80.5 % vs 75.5% for DPT-1). The same difference remains if the percentages of the males and females receiving the third dose of the same antigens are compared.

Coverage Comparison Between Reported and Evaluated Figures (Figure Bahawalnagar - e):

Except for OPV-3 and Measles where reported coverage was less than 100 %, in all other vaccinations reported coverage was more than 101 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 88.6 % for BCG to minimum of 63.5 % for Measles. On the basis of reported figures the coverage dropped from 132 % to 94 % for OPV and from 83.9 % to 70.6 % for evaluated figures. Similarly reported coverage dropped from 118% to 101% DPT-1 and DPT-3 where as for evaluated figures it dropped from 78.2 % to 65.9 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Bahawalnagar - f)

Total TT coverage of mothers (by history and card) in Bahawalnagar district ranged from 61.7 % for TT-1 to 3.9 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 16.5 % to 0.5 %.

RAHIM YAR KHAN DISTRICT

Vaccination Coverage by Antigens (Figure Rahim Yar Khan -a):

In Rahim Yar Khan district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 90.5 % for BCG and OPV-1. Minimum coverage was for measles, which was 72.1 %. Coverage of OPV-1 dropped from 90.5 % to 84.7 % for OPV-3 and that of DPT from 84.2 % to 79.3 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 43 % for all antigens. However here, the maximum is for BCG (42.3 %) and minimum for measles (32.9 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 70.7 %.

Vaccination Coverage with Gender Breakup (Figure Rahim Yar Khan - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (52.17 % for males Vs 57.01 % females). Indicated that the program did not equally reach males and females children and there is no discrimination between male and female children. It is interesting to note that if the comparison is done for male and female children who got vaccination by history more males are vaccinated where as cards are telling more females are vaccinated.

Coverage Comparison Between Reported and Evaluated Figures (Figure Rahim Yar Khan - e):

Except for DPT-2 and DPT-3 where reported coverage was less than 100 %, in all other vaccinations reported coverage was more than 103 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 90.5 % for BCG and OPV-1 to minimum of 72.1 % for Measles. On the basis of reported figures the coverage dropped from 120 % to 103 % for OPV and from 90.5 % to 84.7 % for evaluated figures. Similarly reported coverage dropped from 109 % to 94 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 84.2 % to 79.3 % for same antigen.

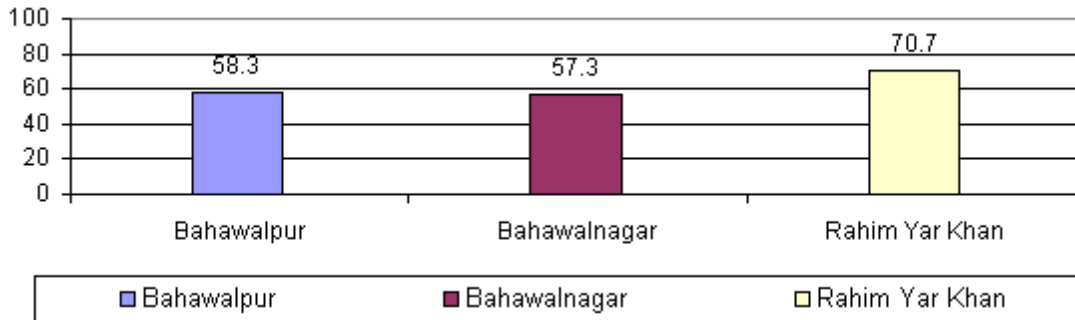
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Rahim Yar Khan - f)

Total TT coverage of mothers (by history and card) in Rahim Yar Khan district ranged from 78.3 % for TT-1 to 9.7 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 46.1 % to 1.8 %.

BAHAWALPUR DIVISION

Following are the district-wise coverage in the division of Bahawalpur:

District	Coverage %
Bahawalpur	58.3
Bahawalnagar	57.3
Rahim Yar Khan	70.7



DERA GHAZI KHAN DISTRICT

Vaccination Coverage by Antigens (Figure Dera Ghazi Khan -a):

In Dera Ghazi Khan district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 93.7 % for BCG. Minimum coverage was for measles, which was 68.1 %. Coverage of OPV-1 dropped from 92.3 % to 73.9% for OPV-3 and that of DPT from 92.3 % to 72.5 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 23 % for all antigens. However here, the maximum is for BCG, OPV-1 and DPT 1 (22.7 %) and minimum for measles (17.9 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 67.1 %.

Vaccination Coverage with Gender Breakup (Figure Dera Ghazi Khan - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more males being fully immunized (67.86 % for males Vs 60.0 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are also different (94.6 vs 89.5 for OPV-1; 94.6 % vs 89.5 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then again more males are receiving third dose as compared to the females (75 % vs 72.6% for OPV-3; 74.1 % vs 70.5 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Dera Ghazi Khan - e):

Except for DPT-1, DPT-2 and DPT-3 where reported coverage was less than 100 %, in all other vaccinations reported coverage was more than 109 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 93.7 % for BCG to minimum of 68.1 % for Measles. On the basis of reported figures the coverage dropped from 146 % to 126 % for OPV and from 92.3 % to 73.9 % for evaluated figures. Similarly reported coverage dropped from 96 % to 79 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 92.3 % to 72.5 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Dera Ghazi Khan - f)

Total TT coverage of mothers (by history and card) in Dera Ghazi Khan district ranged from 22.7 % for TT-1 to 3.0 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 8.9 % to 0.5 %.

LAYYAH DISTRICT

Vaccination Coverage by Antigens (Figure Layyah -a):

In Layyah district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 89.4 % for OPV-1. Minimum coverage was for measles, which was 71.8 %. Coverage of OPV-1 dropped from 89.4 % to 75 % for OPV-3 and that of DPT from 88.4 % to 74.5 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 62 % for all antigens. However here, the maximum is for BCG, OPV-1 and DPT-2 (62 %) and minimum for measles (54.2 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 67.6 %.

Vaccination Coverage with Gender Breakup (Figure Layyah - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (58.12 % for males Vs 62.63 % females). Indicated that there is no discrimination between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (89.7 vs 88.9 for OPV-1; 88.9 % vs 87.9 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then the same difference remains.

Coverage Comparison Between Reported and Evaluated Figures (Figure Layyah - e):

Except for BCG, OPV-1 where reported coverage was more than 100 %, in all other vaccinations reported coverage was less than 98 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 89.4 % for OPV-1 to minimum of 71.4 % for Measles. On the basis of reported figures the coverage dropped from 112 % to 74 % for OPV and from 89.4 % to 75 % for evaluated figures. Similarly reported coverage dropped from 98 % to 69 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 88.4 % to 74.5 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Layyah - f)

Total TT coverage of mothers (by history and card) in Layyah district ranged from 68 % for TT-1 to 0.5 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 29.7 % to 0 %.

MUZZAFARGARH DISTRICT

Vaccination Coverage by Antigens (Figure Muzaffargarh -a):

In Muzaffargarh district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 85.3 % for BCG. Minimum coverage was for measles, which was 62.7 %. Coverage of OPV-1 dropped from 82 % to 68.7 % for OPV-3 and that of DPT from 76.5 % to 63.1 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 36 % for all antigens. However here, the maximum is for BCG (35.5 %) and minimum for measles (25.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 58.1 %.

Vaccination Coverage with Gender Breakup (Figure Muzaffargarh - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females, with equal percentages of males and females being fully immunized. Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (82.2 vs 81.8 for OPV-1; 78.3 % vs 79.3 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then the same difference remains.

Coverage Comparison Between Reported and Evaluated Figures (Figure Muzaffargarh - e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 119 %, in all other vaccinations reported coverage was less than 96 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 85.3 % for BCG to minimum of 62.7 % for Measles. On the basis of reported figures the coverage dropped from 119 % to 87 % for OPV and from 82 % to 68.7 % for evaluated figures. Similarly reported coverage dropped from 119 % to 87 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 76.5 % to 63.1 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Muzaffargarh - f)

Total TT coverage of mothers (by history and card) in Muzaffargarh district ranged from 67 % for TT-1 to 7.4 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 7.9 % to 0%.

RAJANPUR DISTRICT

Vaccination Coverage by Antigens (Figure Rajanpur -a):

In Rajanpur district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 65.6 % for BCG. Minimum coverage was for measles, which was 32.5 %. Coverage of OPV-1 dropped from 67 % to 41.1 % for OPV-3 and that of DPT from 57.4 % to 35.4 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 8 % for all antigens. However here, the maximum is for BCG, OPV-1 and DPT-1 (8.1 %) and minimum for OPV-3 (3.8 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 28.7 %.

Vaccination Coverage with Gender Breakup (Figure Rajanpur - b, c, d)

For the children where immunization status was determined by cards and history, there was significant difference between the males and females, with more males being fully immunized (26.36 % males vs 22.5% females). Indicated that the program didn't equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (67.4 vs 66.3 for OPV-1; 59.7 % vs 53.8 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then more males are completing their three antigens as compared to females (45 vs 35 for OPV-3; 39.5 % vs 28.8 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Rajanpur - e):

Except for OPV-3, DPT-3 and Measles where reported coverage was less than 89 %, in all other vaccinations reported coverage was more than 105 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 67 % for OPV-1 to minimum of 32.5% for Measles. On the basis of reported figures the coverage dropped from 126 % to 95 % for OPV and from 67 % to 41.1 % for evaluated figures. Similarly reported coverage dropped from 126 % to 89 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 57.4 % to 35.4 % for same antigen.

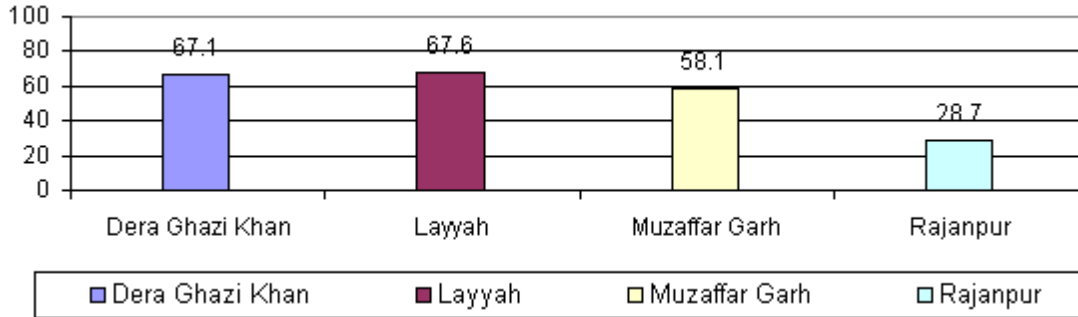
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Rajanpur - f)

Total TT coverage of mothers (by history and card) in Rajanpur district ranged from 44.3 % for TT-1 to 10.3 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 0.5 % to 0%.

DERA GHAZI KHAN DIVISION

Following are the district-wise coverage in the division of Dera Ghazi Khan:

District	Coverage %
Dera Ghazi Khan	67.1
Layyah	67.6
Muzaffar Garh	58.1
Rajanpur	28.7



FAISALABAD DISTRICT

Vaccination Coverage by Antigens (Figure Faisalabad -a):

In Faisalabad district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 94.3 % for OPV-1. Minimum coverage was for Measles, which was 63.4 %. Coverage of OPV-1 dropped from 94.3 % to 78.4 % for OPV-3 and that of DPT from 87.7 % to 70.3 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 60 % for all antigens. However here, the maximum is for OPV-1 and DPT-1 (59.5 %) and minimum for Measles (46.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 56.4 %.

Vaccination Coverage with Gender Breakup (Figure Faisalabad - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the fully immunized males and females (52.1 % males vs 51.85 % females). Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (94.1 vs 94.4 for OPV-1; 89.1 % vs 86.1 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then more females are completing their three antigens as compared to males (75.6 vs 81.5 for OPV-3; 68.9 % vs 72.2 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Faisalabad - e):

Except for BCG where reported coverage was 105 %, in all other vaccinations reported coverage was less than 94 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 94.3 % for OPV-1 to minimum of 63.4 % for Measles. On the basis of reported figures the coverage dropped from 94 % to 67 % for OPV and from 94.3 % to 78.4 % for evaluated figures. Similarly reported coverage dropped from 94 % to 67 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 87.7 % to 70.5 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Faisalabad - f)

Total TT coverage of mothers (by history and card) in Faisalabad district ranged from 59.6 % for TT-1 to 3.9 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 14.9 % to 0.4 %.

JHANG DISTRICT

Vaccination Coverage by Antigens (Figure Jhang -a):

In Jhang district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 93 % for OPV-1. Minimum coverage was for Measles, which was 67.4 %. Coverage of OPV-1 dropped from 93 % to 80 % for OPV-3 and that of DPT from 87 % to 70.2 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 45 % for all antigens. However here, the maximum is for OPV-1 (45.1 %) and minimum for Measles (35.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 62.8 %.

Vaccination Coverage with Gender Breakup (Figure Jhang - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the fully immunized males and females (56.69 % males vs 57.95 % females). Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (93.7 vs 92 for OPV-1; 85.8 % vs 88.6 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, equal percentages of both groups are completing their three antigens as compared to females (82.7 vs 76.1 for OPV-3; 70.1 % vs 70.5 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Jhang - e):

Except for BCG where reported coverage was 45* %, in all other vaccinations reported coverage was more than 113 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 93 % for OPV 1 to minimum of 67.4 % for Measles. On the basis of reported figures the coverage dropped from 138 % to 118 % for OPV and from 93 % to 80 % for evaluated figures. Similarly reported coverage dropped from 138 % to 118 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 87 % to 70.2 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Jhang - f)

Total TT coverage of mothers (by history and card) in Jhang district ranged from 47.5 % for TT-1 to 3.2 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 13.7 % to 0.9 %.

* There may be a misprint because it is very unlikely that reported coverage is 45 % for BCG

TOBA TEK SINGH DISTRICT

Vaccination Coverage by Antigens (Figure Tob Tek Singh -a):

In Toba Tek Singh district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 95.5 % for OPV-1. Minimum coverage was for Measles, which was 75.3 %. Coverage of OPV-1 dropped from 95.5 % to 89.2 % for OPV-3 and that of DPT from 91.9 % to 83 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 57 % for all antigens. However here, the maximum is for BCG (57.8 %) and minimum for Measles (48.9 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 71.3 %.

Vaccination Coverage with Gender Breakup (Figure Tob Tek Singh - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the fully immunized males and females (72.88 % males vs 69.52 % females). Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are very similar (94.9 vs 96.2 for OPV-1; 91.5 % vs 92.4 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then more males are completing their three antigens as compared to females (91.5 vs 86.7 for OPV-3; 84.7 % vs 81 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Tob Tek Singh - e):

In all vaccinations reported coverage was more than 111 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 95.5 % for OPV-1 to minimum of 75.8 % for Measles. On the basis of reported figures the coverage dropped from 127 % to 111 % for OPV and from 95.5 % to 89.2 % for evaluated figures. Similarly reported coverage dropped from 127 % to 111 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 91.9 % to 83 % for same antigen.

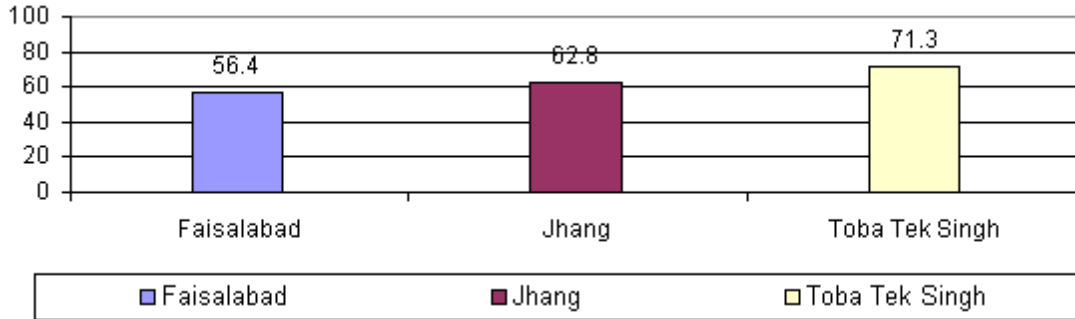
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Tob Tek Singh - f)

Total TT coverage of mothers (by history and card) in Toba Tek Singh district ranged from 54.3 % for TT-1 to 1.7 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 13.4 % to 0%.

FAISALABAD DIVISION

Following are the district-wise coverage in the division of Faisalabad:

District	Coverage %
Faisalabad	56.4
Jhang	62.8
Toba Tek Singh	71.3



GUJRANWALA DISTRICT

Vaccination Coverage by Antigens (Figure Gujranwala -a):

In Gujranwala district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 88.8 % for BCG and OPV-1. Minimum coverage was for Measles, which was 71.5 %. Coverage of OPV-1 dropped from 88.8% to 80.8% for OPV-3 and that of DPT from 84.1 % to 75.2 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 43 % for all antigens. However here, the maximum is for BCG (42.5%) and minimum for Measles (32.7 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 67.8 %.

Vaccination Coverage with Gender Breakup (Figure Gujranwala - b, c, d)

For the children where immunization status was determined by cards and history, there was significant difference between the fully immunized males and females (77.12 % males vs 48.96 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are more in the favor of males (92.4 vs 84.4 for OPV-1; 91.5 % vs 75 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then more males are completing their three antigens as compared to females (88.1 vs 71.9 for OPV-3; 85.6 % vs 62.5 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Gujranwala - e):

Except for BCG, OPV-1 and Measles where reported coverage was more than 100 %, in all other vaccinations reported coverage was less than 98 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 88.8 % for BCG and OPV-1 to minimum of 71.5 % for Measles. On the basis of reported figures the coverage dropped from 107 % to 96 % for OPV and from 88.8 % to 80.8 % for evaluated figures. Similarly reported coverage dropped from 95 % to 83 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 84.1 % to 75.2 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Gujranwala - f)

Total TT coverage of mothers (by history and card) in Gujranwala district ranged from 75.7 % for TT-1 to 10.2 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 22.3 % to 0%.

GUJRAT DISTRICT

Vaccination Coverage by Antigens (Figure Gujrat -a):

In Gujrat district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 98.2 % for OPV-1. Minimum coverage was for Measles, which was 87.6 %. Coverage of OPV-1 dropped from 98.2 % to 91.7 % for OPV-3 and that of DPT from 95.4 % to 91.3 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 43 % for all antigens. However here, the maximum is for BCG (42.7%) and minimum for Measles (38.1 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 83.9 %.

Vaccination Coverage with Gender Breakup (Figure Gujrat - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the fully immunized males and females (84.09 % males vs 86.05 % females). Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (97.7 vs 98.8 for OPV-1; 96.2 % vs 94.2 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, then more females are completing their three antigens as compared to males (90.9 vs 93 for OPV-3; 89.4 % vs 94.2 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Gujrat - e):

Except for OPV-3 and DPT-3, in all other vaccinations reported coverage was more than 100 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 98.2 % for OPV-1 to minimum of 87.6 % for Measles. On the basis of reported figures the coverage dropped from 108 % to 99 % for OPV and from 98.2 % to 91.7 % for evaluated figures. Similarly reported coverage dropped from 107 % to 98 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 95.4 % to 91.3 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Gujrat - f)

Total TT coverage of mothers (by history and card) in Gujrat district ranged from 77.5 % for TT-1 to 4.6 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 17 % to 0%.

HAFIZABAD DISTRICT

Vaccination Coverage by Antigens (Figure Hafizabad -a):

In Hafizabad district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 90 % for OPV-1. Minimum coverage was for Measles, which was 69.5 %. Coverage of OPV-1 dropped from 90 % to 81.8 % for OPV-3 and that of DPT from 86.4 % to 79.1 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 27.3 % for all antigens. However here, the maximum is for DPT-1 (27.3%) and minimum for Measles (20.9 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 68.6 %.

Vaccination Coverage with Gender Breakup (Figure Hafizabad - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the fully immunized males and females (67.5 % males vs 69 % females). Indicated that the program did equally reach males and females children or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (90.8 vs 89 for OPV-1; 87.5 % vs 85 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, equal percentages are completing their three antigens as compared to females (80.8 vs 83 for OPV-3; 79.2 % vs 79 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Hafizabad - e):

In all vaccinations reported coverage was more than 114 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 90 % for OPV-1 to minimum of 69.5 % for Measles. On the basis of reported figures the coverage dropped from 135 % to 114 % for OPV and from 90 % to 81.8 % for evaluated figures. Similarly reported coverage dropped from 135 % to 114 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 86.4 % to 79.1 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Hafizabad - f)

Total TT coverage of mothers (by history and card) in Hafizabad district ranged from 69.9 % for TT-1 to 1.9 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 13.9 % to 0%.

MANDI-BAHAUDDIN DISTRICT

Vaccination Coverage by Antigens (Figure Mandi-Bahauddin -a):

In Mandi-Bahauddin district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 96.2 % for OPV-1. Minimum coverage was for Measles, which was 82.2 %. Coverage of OPV-1 dropped from 96.2 % to 89.2 % for OPV-3 and that of DPT from 94.8 % to 87.8 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 55 % for all antigens. However here, the maximum is for OPV-1 (54.5%) and minimum for Measles (46.5 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 79.8 %.

Vaccination Coverage with Gender Breakup (Figure Mandi-Bahauddin - b, c, d)

For the children where immunization status was determined by cards and history, there was significant difference between the fully immunized males and females (75.76 % males vs 83.95 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (95.5 vs 97.5 for OPV-1; 94.7 % vs 95.1 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, equal percentages of males are completing their three antigens as compared to females (87.9 vs 91.4 for OPV-3; 87.1 % vs 88.9 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Mandi-Bahauddin - e):

In all vaccinations reported coverage was more than 99 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 96.2 % for OPV-1 to minimum of 82.2 % for Measles. On the basis of reported figures the coverage dropped from 118 % to 107 % for OPV and from 96.2 % to 89.2 % for evaluated figures. Similarly reported coverage dropped from 118 % to 107 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 94.8 % to 87.8 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Mandi-Bahauddin - f)

Total TT coverage of mothers (by history and card) in Mandi-Bahauddin district ranged from 58.6 % for TT-1 to 2.6 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 12.3 % to 0%.

NAROWAL DISTRICT

Vaccination Coverage by Antigens (Figure Narowal -a):

In Narowal district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 91.8 % for OPV-1. Minimum coverage was for Measles, which was 67.8 %. Coverage of OPV-1 dropped from 91.8 % to 84.6 % for OPV-3 and that of DPT from 90.9 % to 83.2 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 33.7 % for all antigens. However here, the maximum is for DPT 1 (33.7%) and minimum for Measles (24.5 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 66.8 %.

Vaccination Coverage with Gender Breakup (Figure Narowal - b, c, d)

For the children where immunization status was determined by cards and history, there was significant difference between the fully immunized males and females (62.02 % males vs 54.43 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are in the favor of males (93.8 vs 88.6 for OPV-1; 91.5 % vs 89.9 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, equal percentages of males are completing their three antigens as compared to females (85.3 vs 83.5 for OPV-3; 82.9 % vs 83.5 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Narowal - e):

In all vaccinations reported coverage was more than 92 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 91.8 % for OPV-1 to minimum of 67.8 % for Measles. On the basis of reported figures the coverage dropped from 122 % to 102 % for OPV and from 91.8 % to 84.6 % for evaluated figures. Similarly reported coverage dropped from 122 % to 102 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 90.9 % to 83.2 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Narowal - f)

Total TT coverage of mothers (by history and card) in Narowal district ranged from 74.6 % for TT-1 to 2.0 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 20.5 % to 0%.

SIALKOT DISTRICT

Vaccination Coverage by Antigens (Figure Sialkot -a):

In Sialkot district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 95.6 % for BCG. Minimum coverage was for Measles, which was 78.8 %. Coverage of OPV-1 dropped from 95.1 % to 87.7 % for OPV-3 and that of DPT from 91.1 % to 83.7 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 46.8 % for all antigens. However here, the maximum is for OPV-1 (46.8%) and minimum for Measles (38.4 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 76.8 %.

Vaccination Coverage with Gender Breakup (Figure Sialkot - b, c, d)

For the children where immunization status was determined by cards and history, there was significant difference between the fully immunized males and females (77.48 % males vs 70.65 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are in the favor of males (98.2 vs 91.3 for OPV-1; 92.8 % vs 89.1 % for DPT-1). However, if the percentages of the males and females receiving the third dose of the same antigens are compared, more percentages of males are completing their three antigens as compared to females (91 vs 83.7 for OPV-3; 84.7 % vs 82.6 % for DPT-3).

Coverage Comparison Between Reported and Evaluated Figures (Figure Sialkot - e):

In all vaccinations reported coverage was more than 100 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 95.6 % for BCG to minimum of 78.8 % for Measles. On the basis of reported figures the coverage dropped from 110 % to 100 % for OPV and from 95.1 % to 87.7 % for evaluated figures. Similarly reported coverage dropped from 113 % to 102 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 91.1 % to 83.7 % for same antigen.

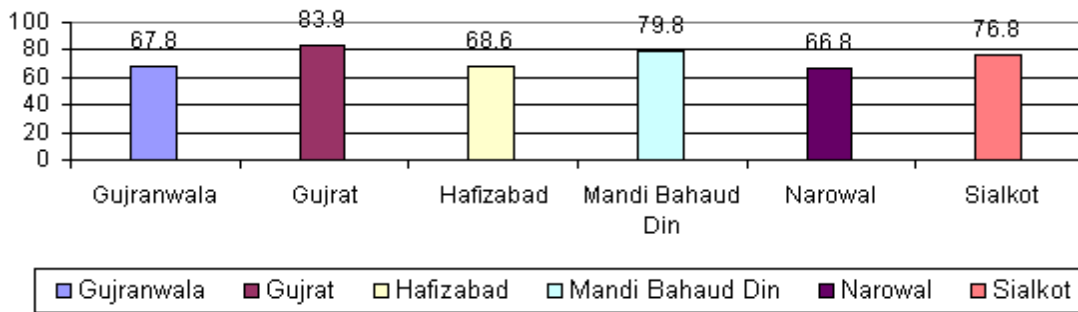
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Sialkot - f)

Total TT coverage of mothers (by history and card) in Sialkot district ranged from 86.8 % for TT-1 to 1.4 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 25.9 % to 0.5 %.

GUJRANWALA DIVISION

Following are the district-wise coverage in the division of Gujranwala:

District	Coverage %
Gujranwala	67.8
Gujrat	83.9
Hafizabad	68.6
Mandi Bahaud Din	79.8
Narowal	66.8
Sialkot	76.8



KASUR DISTRICT

Vaccination Coverage by Antigens (Figure Kasur-a):

In Kasur district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 92.6 % for OPV-1. Minimum coverage was for measles, which was 60.3 %. Coverage of OPV-1 dropped from 92.6 % to 75.1 % for OPV-3 and that of DPT from 87.3 to 65.9 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 28.8 % for all antigens. However here, the maximum is for OPV-1 and DPT-1 (28.8 %) and minimum for measles (19.7 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 53.7 %.

Vaccination Coverage with Gender Breakup (Figure Kasur- b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more males being fully immunized (57.05% for males Vs 48.75% females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT1 for males and females, then the percentages are almost same (92.6 vs 92.5 for OPV-1; 87.9 vs 86.3). However, if the percentages of the males and females receiving the third dose of the same antigens are compared then more males are receiving DPT-3 as compared to females.

Coverage Comparison between Reported and Evaluated Figures (Figure Kasur- e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 100 %, in all other vaccinations reported coverage was less than 100 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 92.6 % for OPV-1 to minimum of 60.3 % for Measles. On the basis of reported figures the coverage dropped from 111 to 86 % for OPV and from 92.6 to 75.1 % for evaluated figures. Similarly reported coverage dropped from 100 to 81 DPT-1 and DPT-3 where as for evaluated figures it dropped from 87.3 % to 76.9 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Kasur- f)

Total TT coverage of mothers (by history and card) in Kasur district ranged from 63.8 % for TT-1 to 5% for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 11.8 % to 0.5 %.

LAHORE RURAL DISTRICT

Vaccination Coverage by Antigens (Figure Lahore Rural -a):

In Lahore Rural district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 91.7 % for OPV-1. Minimum coverage was for Measles, which was 64.4 %. Coverage of OPV-1 dropped from 91.7 % to 80 % for OPV-3 and that of DPT from 88.8 to 72.7 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 27.3 % for all antigens. However here, the maximum is for OPV-1 and DPT-1 (27.3 %) and minimum for measles (21 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 60 %.

Vaccination Coverage with Gender Breakup (Figure Lahore Rural - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (54.92 % for males Vs 63.86 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did not discriminate for female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are almost same (92.6 vs 90.4 for OPV-1; 88.5 % vs 89.2 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then females are receiving more DPT-3 as compared to males.

Coverage Comparison between Reported and Evaluated Figures (Figure Lahore Rural - e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 109%, in all other vaccinations reported coverage was less than 100 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 91.7 % for OPV-1 to minimum of 64.4 % for Measles. On the basis of reported figures the coverage dropped from 109 to 93 % for OPV and from 91.7 to 80 % for evaluated figures. Similarly reported coverage dropped from 109 to 93 DPT-1 and DPT-3 where as for evaluated figures it dropped from 88.8 % to 72.7 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Lahore Rural - f)

Total TT coverage of mothers (by history and card) in Lahore Rural district ranged from 60.2 % for TT-1 to 9.2 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 18.4 % to 1.0 %.

LAHORE URBAN DISTRICT

Vaccination Coverage by Antigens (Figure Lahore Urban -a):

In Lahore Urban district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 95.8 % for BCG, OPV-1 and DPT-1. Minimum coverage was for Measles, which was 82.7 %. Coverage of OPV-1 dropped from 95.8 % to 88.5 % for OPV-3 and that of DPT from 95.8 to 87.4 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 32.5 % for all antigens. However here, the maximum is for OPV-1 (41.4 %) and minimum for measles (32.5%). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 81.2 %.

Vaccination Coverage with Gender Breakup (Figure Lahore Urban - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (75.27 % for males Vs 79.59 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did not discriminate for female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are in the favor of males (97.8 vs 93.9 for OPV-1; 97.8 % vs 93.9 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then again more males are receiving these as compared to females (90.3 vs 86.7 for OPV-3; 90.3 % vs 84.7 % for DPT-3). Interestingly the coverage on cards is more for females as compared to males in Urban areas of Lahore district.

Coverage Comparison between Reported and Evaluated Figures (Figure Lahore Urban - e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 109%, in all other vaccinations reported coverage was between 88 and 109 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 95.8 % for BCG, OPV-1 and DPT-1 to minimum of 82.7 % for Measles. On the basis of reported figures the coverage dropped from 109 to 93 % for OPV and from 95.8 to 88.5 % for evaluated figures. Similarly reported coverage dropped from 109 to 93 DPT-1 and DPT-3 where as for evaluated figures it dropped from 95.8 % to 87.4 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Lahore Urban - f)

Total TT coverage of mothers (by history and card) in Lahore Urban district ranged from 87.8 % for TT-1 to 10.7 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 14.2 % to 1.0 %.

DISTRICT LAHORE

Urban vs Rural –Comparison Coverage.

Children Coverage

A comparison is made between Lahore Urban clusters and Lahore Rural clusters since Lahore was considered for both types of populations. As shown in Fig, the vaccination coverage for the childhood population for each dose of various antigens indicates that the urban population was covered more than the rural population. Ninety-six percent of the urban children were vaccinated with BCG when both cards and history was considered as compared to 87% of the rural children. Similarly, there were small differences between the three doses of Polio and DPT antigens among these children. Measles vaccination however, showed a larger difference between the two populations of 83 and 64% respectively. When 'fully vaccinated' children were considered, the difference was larger i.e., of 81 and 60% respectively.

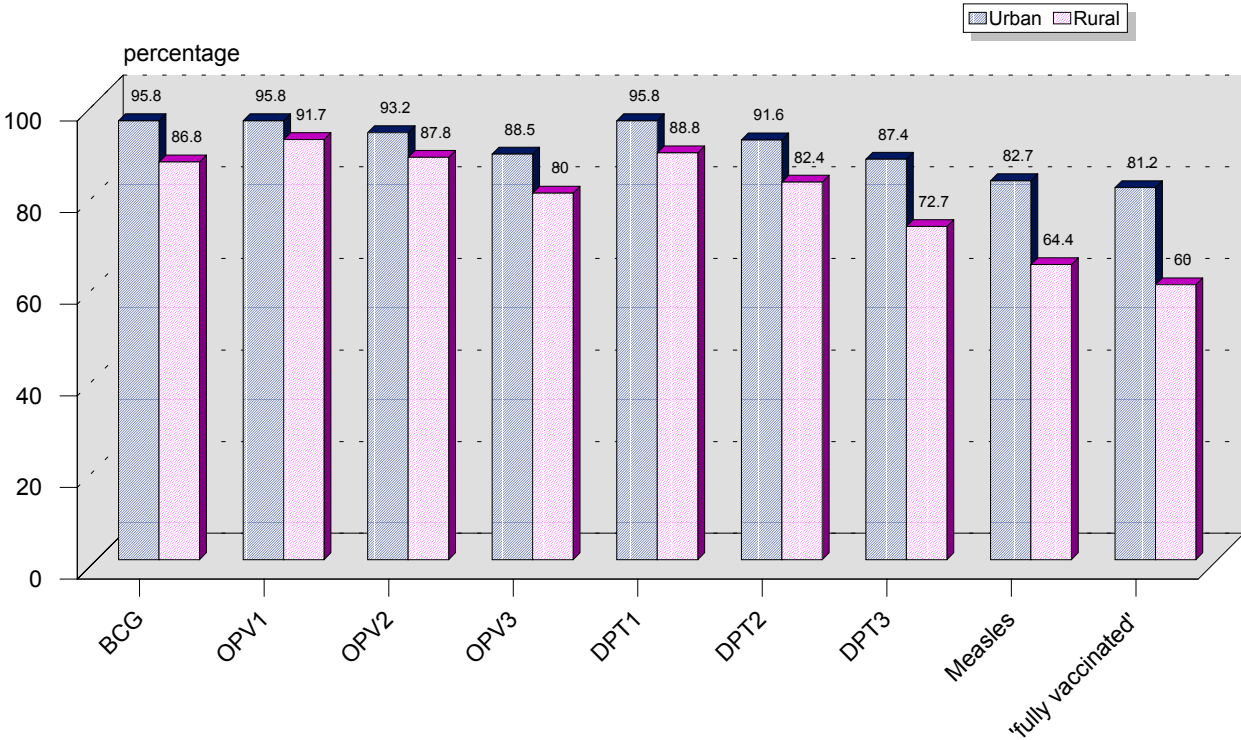


Fig showing Childhood immunization: Antigen dosage comparison - Urban vs Rural (Lahore District) - by antigen dosage

Maternal Coverage

When maternal vaccination was compared among the two groups of mothers, larger differences were found between first and the second doses of Tetanus vaccinations (Fig). The rural mothers were lagging behind by 28% for the first dose of TT (88% urban mothers and 60% rural mothers) as compared to the urban mothers. While, the difference for TT-2, was 30% of the rural mothers being less vaccinated as compared to the urban mothers (84% urban mothers and 54% rural mothers). The differences for the 3rd to 5th doses of TT became smaller among the urban and the rural populations.

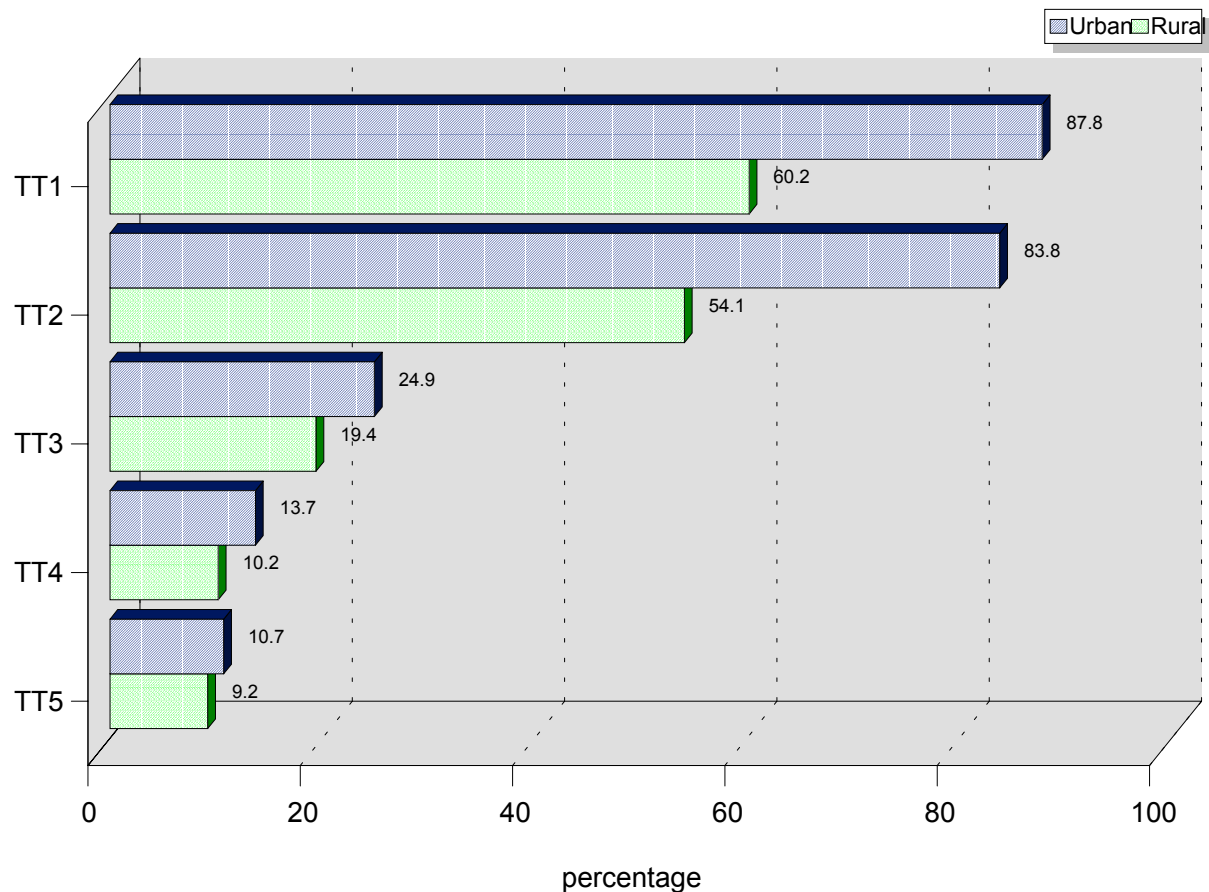


Fig showing Maternal immunization: Antigen dosage comparison - Urban vs Rural (Lahore District) -

OKARA DISTRICT

Vaccination Coverage by Antigens (Figure Okara -a):

In Okara district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 79.9 % for OPV-1. Minimum coverage was for Measles, which was 57.8 %. Coverage of OPV-1 dropped from 79.9 % to 69.6 % for OPV-3 and that of DPT from 74 to 61.3 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 23 % for all antigens. However here, the maximum is for BCG, OPV-1 and DPT-1(23 %) and minimum for measles (15.7%). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 49.5 %.

Vaccination Coverage with Gender Breakup (Figure Okara - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (46.94 % for males Vs 55.66 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (80.6 vs 79.2 for OPV-1; 76.5 % vs 71.7 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are equal (69.4 vs 69.8 for OPV-3; 61.2 % vs 61.3 % for DPT-3).

Coverage Comparison between Reported and Evaluated Figures (Figure Okara - e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 100 %, in all other vaccinations reported coverage was between 92 and 100 %. On the other hand the figures on the basis of evaluation, ranged from a maximum of 95.8 % for BCG and OPV-1 to minimum of 57.8 % for Measles. On the basis of reported figures the coverage dropped from 110 to 82 % for OPV and from 79.9 to 69.5 % for evaluated figures. Similarly reported coverage dropped from 100 to 76 DPT-1 and DPT-3 where as for evaluated figures it dropped from 74 % to 61.3 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Okara - f)

Total TT coverage of mothers (by history and card) in Okara district ranged from 61.3 % for TT-1 to 5.5 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 16.1 % to 0.5 %.

SHEIKHUPURA DISTRICT

Vaccination Coverage by Antigens (Figure Sheikhpura -a):

In Sheikhpura district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 96 % for OPV-1. Minimum coverage was for Measles, which was 76.4 %. Coverage of OPV-1 dropped from 96 % to 88.9 % for OPV-3 and that of DPT from 95 to 85.9 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 42.7 % for all antigens. However here, the maximum is for OPV-1 and OPV-2 (42.7 %) and minimum for measles (32.7 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 73.4 %.

Vaccination Coverage with Gender Breakup (Figure Sheikhpura - b, c, d)

For the children where immunization status was determined by cards and history, there was a significant difference between the males and females, with more females being fully immunized (71.07 % for males Vs 75.64 % females). Indicated that the program did not equally reach males and females children or that the mothers/families did not discriminate for female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (95 vs 97.4 for OPV-1; 94.2 % vs 96.2 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are equal (88.4 vs 89.7 for OPV-3; 86 % vs 85.9 % for DPT-3).

Coverage Comparison between Reported and Evaluated Figures (Figure Sheikhpura - e):

In all vaccinations reported coverage was more than 100 %. On the other hand the figures on the basis of evaluation, these figures ranged from a maximum of 96 % for OPV-1 to minimum of 76.4 % for Measles. On the basis of reported figures the coverage increased from 111 to 118 % for OPV and from 96 to 88.9 % for evaluated figures. Similarly reported coverage increased from 107 to 113 DPT-1 and DPT-3 where as for evaluated figures it dropped from 95 % to 85.9 % for same antigen.

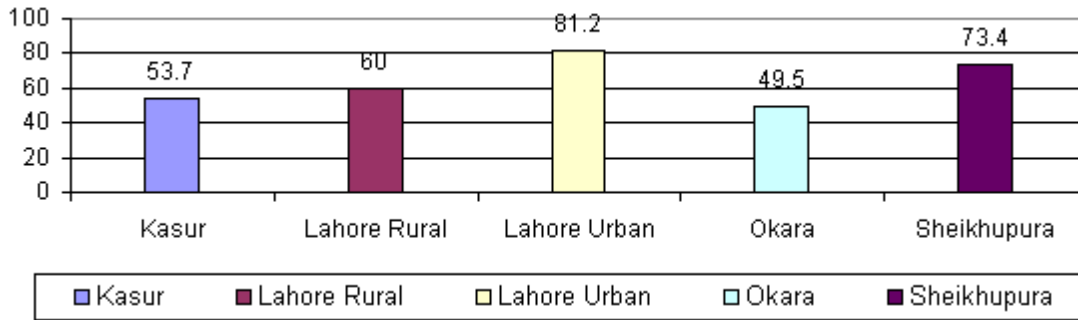
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Sheikhpura - f)

Total TT coverage of mothers (by history and card) in Sheikhpura district ranged from 78.7 % for TT-1 to 12.3 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 22.3 % to 2.8 %.

LAHORE DIVISION

Following are the district-wise coverage in the division of Lahore:

District	Coverage %
Kasur	53.7
Lahore Rural	60
Lahore Urban	81.2
Okara	49.5
Sheikhupura	73.4



KHANEWAL DISTRICT

Vaccination Coverage by Antigens (Figure Khanewal-a):

In Khanewal district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 96.8 % for BCG, OPV-1 and DPT-1 (This was also verified by presence of scar). Minimum coverage was for measles, which was 83.6 %. Coverage of OPV-1 dropped from 96.8 % to 87.7 % for OPV-3 and that of DPT from 96.8 % to 87.2 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 66.2 % for all antigens. However here, the maximum is for OPV-1 and DPT-1 (66.2 %) and minimum for measles (56.6 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 80.4%.

Vaccination Coverage with Gender Breakup (Figure Khanewal- b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females, which means that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. However, if we only look at the children where cards were present, then in all antigens, around there is a difference of 5 % amongst males and females. Here the differences are in favor of female children.

Coverage Comparison between Reported and Evaluated Figures (Figure Khanewal-e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 100 %, in all other vaccinations reported coverage is between 94 and 100 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 96.8 % for BCG, OPV-1 and DPT-1 to minimum of 83.6 % for Measles. On the basis of reported figures the coverage dropped from 105 to 97 % for OPV and from 96.8 to 87.7 % for evaluated figures. Similarly coverage dropped from 105 % to 97 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 96.8 % to 87.2% for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Khanewal- f)

Total TT coverage of mothers (by history and card) in Khanewal district ranged from 74.1% for TT-1 to 1.8 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 19.3% to 0.4%.

LODHHRAN DISTRICT

Vaccination Coverage by Antigens (Figure Lodhran-a):

In Lodhran district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 93.8 % for BCG (This was also verified by presence of scar). Minimum coverage was for DPT-3, which was 81.3 %. Coverage of OPV-1 dropped from 89 % to 82.8 % for OPV-3 and that of DPT from 88 % to 81.3 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 41.1 % for all antigens. However here, the maximum is for OPV-1 (41.1 %) and minimum for measles (32.1 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 80.4%.

Vaccination Coverage with Gender Breakup (Figure Lodhran - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (78.50 % vs. 80.39 %). Indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are in the favor of females (86 vs 92.2 for OPV-1; 86 % vs 90.2 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again in the favor of females (80.4 vs 85.3 for OPV-3; 79.4 % vs 83.3 % for DPT-3).

Coverage Comparison between Reported and Evaluated Figures (Figure Lodhran -e):

Except for BCG, OPV-1 and DPT-1 where reported coverage was more than 112 %, in all other vaccinations reported coverage was less than 94 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 93.8 % for BCG to minimum of 81.3 % for DPT-3. On the basis of reported figures the coverage dropped from 112 to 89 % for OPV and from 89 to 82.8 % for evaluated figures. Similarly coverage dropped from 112 % to 89 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 88 % to 81.3% for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Lodhran - f)

Total TT coverage of mothers (by history and card) in Lodhran district ranged from 66.2 % for TT-1 to 4.7 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 20.2 % to 0.5 %.

MULTAN DISTRICT

Vaccination Coverage by Antigens (Figure Multan -a):

In Multan district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 98.1 % for BCG (This was also verified by presence of scar). Minimum coverage was for measles, which was 92.6 %. Coverage of OPV-1 dropped from 96.8 % to 93.5 % for OPV-3 and that of DPT from 95.4 % to 93.5 % for the 1st and 3rd dose. If we take into account only the record of vaccinations on vaccination cards then the coverage is less than 61.6 % for all antigens. However here, the maximum is for BCG, OPV-1 and DPT-1 (61.6 %) and minimum for measles (57.4 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 92.1%.

Vaccination Coverage with Gender Breakup (Figure Multan - b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (90.70 % vs 91.95 %). Indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are equal (97.7 vs 95.4 for OPV-1; 95.3 % vs 95.4 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (93 vs 94.3 for OPV-3; 93 % vs 94.3 % for DPT-3).

Coverage Comparison between Reported and Evaluated Figures (Figure Multan -e):

Except for OPV-3 and DPT-3 where reported coverage was 93%, in all other vaccinations reported coverage was more than 104 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 98.1 % for BCG to minimum of 92.6 % for Measles. On the basis of reported figures the coverage dropped from 113 to 93 % for OPV and from 96.8 to 93.5 % for evaluated figures. Similarly coverage dropped from 113 % to 93 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 95.4 % to 93.5% for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Multan - f)

Total TT coverage of mothers (by history and card) in Multan district ranged from 77.7 % for TT-1 to 1.9 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 36.3 % to 0.9 %.

PAKPATAN DISTRICT

Vaccination Coverage by Antigens (Figure Pakpatan -a):

In Pakpatan district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 90.7 % for BCG (This was also verified by presence of scar). Minimum coverage was for measles, which was 68.4 %. Coverage of OPV-1 dropped from 93.5 % to 80.9 % for OPV-3 and that of DPT from 87.9 % to 74.9 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 35.3 % for all antigens. However here, the maximum is for OPV-1 and DPT 1(35.3 %) and minimum for measles (30.7 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 63.7 %.

Vaccination Coverage with Gender Breakup (Figure Pakpatan – b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (63.48 % vs 64.00 %). This Indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are equal (93 vs 94 for OPV-1; 87.8 % vs 88 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (80.9 vs 81 for OPV 3 and 74.8 % vs 75 % for DPT 3).

Coverage Comparison between Reported and Evaluated Figures (Figure Pakpatan -e):

Except for OPV-3 and DPT-3 where reported coverage was 82 %, in all other vaccinations reported coverage was more than 100 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 93.5 % for OPV 1 to minimum of 68.4 % for Measles. On the basis of reported figures the coverage dropped from 135% to 82 % for OPV and from 93.5 to 80.9 % for evaluated figures. Similarly coverage dropped from 127 % to 82 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 87.9 % to 74.9% for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Pakpatan - f)

Total TT coverage of mothers (by history and card) in Pakpatan district ranged from 49.5 % for TT-1 to 0 % for TT-5. However if only those vaccination are taken into account where cards were present, then the coverage drops from 12.7 % to 0 %.

SAHIWAL DISTRICT

Vaccination Coverage by Antigens (Figure Sahiwal -a):

In Sahiwal district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 99.1 % for BCG (This was also verified by presence of scar). Minimum coverage was for measles, which was 85.8 %. Coverage of OPV-1 dropped from 99.5 % to 92.2 % for OPV-3 and that of DPT from 97.7 % to 88.6 % for the 1st and 3rd dose. If we take into account only the records of vaccination on vaccination cards then the coverage is less than 40.2 % for all antigens. However here, the maximum is for OPV-1 and DPT-1(40.2 %) and minimum for measles (33.8 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 80.8 %.

Vaccination Coverage with Gender Breakup (Figure Sahiwal b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (82.11 % vs 81.25 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (99.2 vs 100 for OPV-1 and 97.6 % vs 97.9 % for DPT-1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (93.5 vs 90.6 for OPV 3 and 91.1 % vs 85.4 % for DPT 3).

Coverage Comparison between Reported and Evaluated Figures (Figure Sahiwal -e):

Except for Measles where reported coverage was 94 %, in all other vaccinations reported coverage was more than 99 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 99.5 % for OPV 1 to minimum of 85.8 % for Measles. On the basis of reported figures the coverage dropped from 117 % to 99 % for OPV and from 99.5 to 92.2 % for evaluated figures. Similarly coverage dropped from 117 % to 99 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 97.7 % to 88.6 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Sahiwal - f)

Total TT coverage of mothers (by history and card) in Sahiwal district ranged from 67.6 % for TT-1 to 2.3 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 11.3 % to 0.5 %.

VEHARI DISTRICT

Vaccination Coverage by Antigens (Figure Vehari -a):

In Vehari district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 96.7 % for BCG (This was also verified by presence of scar). Minimum coverage was for DPT 3, which was 95.8 %. Coverage of OPV-1 dropped from 97.7 % to 97.2 % for OPV-3 and that of DPT from 97.7 % to 95.8 % for the 1st and 3rd dose. If we take into account only the records of vaccination on vaccination cards then the coverage is less than 62.1 % for all antigens. However here, the maximum is for OPV 1 and DPT 1 (62.1 %) and minimum for measles, OPV-3 and DPT-3 (60.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 94.9 %.

Vaccination Coverage with Gender Breakup (Figure Vehari b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (95.12 % vs 94.51 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (98.4 vs 96.7 for OPV-1 and 98.4 % vs 96.7 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (98.4 vs 95.6 for OPV 3 and 96.7 % vs 94.5 % for DPT 3).

Coverage Comparison between Reported and Evaluated Figures (Figure Vehari -e):

Except for Measles where reported coverage was 106 %, in all other vaccinations reported coverage was more than 110 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 97.7 % for OPV 1 to minimum of 95.8 % for DPT-3. On the basis of reported figures the coverage dropped from 129 % to 118 % for OPV and from 97.7 to 97.2 % for evaluated figures. Similarly coverage dropped from 124 % to 114 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 97.7 % to 95.8 % for same antigen.

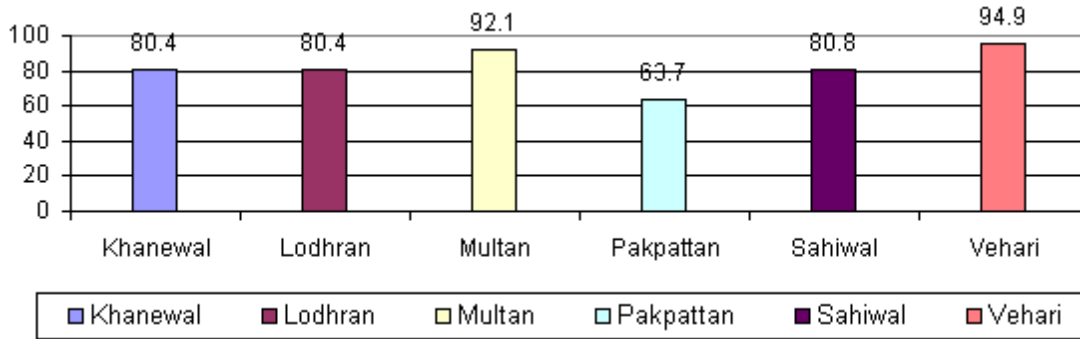
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Vehari - f)

Total TT coverage of mothers (by history and card) in Vehari district ranged from 76 % for TT-1 to 0.5 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 27.2 % to 0.5 %.

MULTAN DIVISION

Following are the district-wise coverage in the division of Multan:

District	Coverage %
Khanewal	80.4
Lodhran	80.4
Multan	92.1
Pakpattan	63.7
Sahiwal	80.8
Vehari	94.9



ATTOCK DISTRICT

Vaccination Coverage by Antigens (Figure Attock -a):

In Attock district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 88.6 % for OPV 1. Minimum coverage was for Measles, which was 69 %. Coverage of OPV-1 dropped from 88.6 % to 75.2 % for OPV-3 and that of DPT from 88.1 % to 73.3 % for the 1st and 3rd dose. If we take into account only the records of vaccination on vaccination cards then the coverage is less than 43 % for all antigens. However here, the maximum is for OPV 1 and BCG (42.4 %) and minimum for measles (31.4 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 65.7 %.

Vaccination Coverage with Gender Breakup (Figure Attock b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (61.90 % vs 66.67 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated and infect more for females. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (87.3 vs 90.5 for OPV-1 and 87.3 % vs 89.3 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (73.8 vs 77.4 for OPV 3 and 71.4 % vs 76.2 % for DPT 3).

Coverage Comparison between Reported and Evaluated Figures (Figure Attock -e):

Except for OPV-3 and DPT-3 where reported coverage were 98 and 99 %, in all other vaccinations reported coverage were more than 100 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 88.1% for BCG to minimum of 69 % for Measles. On the basis of reported figures the coverage dropped from 121 % to 98 % for OPV and from 97.7 to 97.2 % for evaluated figures. Similarly coverage dropped from 121 % to 99 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 88.1 % to 73.3 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Attock - f)

Total TT coverage of mothers (by history and card) in Attock district ranged from 63.3 % for TT-1 to 7.4 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 14 % to 0 %.

CHAKWAL DISTRICT

Vaccination Coverage by Antigens (Figure Chakwal -a):

In Chakwal district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 91.7 % for OPV-1 and BCG (This was also verified by presence of scar). Minimum coverage was for Measles, which was 79.5 %. Coverage of OPV-1 dropped from 91.7 % to 86.8 % for OPV-3 and that of DPT from 90.7 % to 85.4 % for the 1st and 3rd dose. If we take into account only the records of vaccination on vaccination cards then the coverage is less than 59.5 % for all antigens. However here, the maximum is for OPV 1 and DPT 1 (59.5 %) and minimum for measles (53.7 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 78 %.

Vaccination Coverage with Gender Breakup (Figure Chakwal b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (79.69 % vs 79.22 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV-1 and DPT-1 for males and females, then the percentages are almost equal (90.6 vs 93.5 for OPV-1 and 90.6 % vs 90.9 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (85.9 vs 88.3 for OPV 3 and 84.4 % vs 87 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Chakwal -e):

Except for Measles where reported coverage was 98 %, in all other vaccinations reported coverage was more than 100 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 91.7 % for BCG and OPV-1 to minimum of 79.5 % for Measles. On the basis of reported figures the coverage dropped from 113 % to 101 % for OPV and from 91.7 to 86.8 % for evaluated figures. Similarly Reported coverage dropped from 113 % to 101 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 90.7 % to 85.4 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Chakwal - f)

Total TT coverage of mothers (by history and card) in Chakwal district ranged from 68.1 % for TT-1 to 4.9 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 39.7 % to 0.5 %

JHELUM DISTRICT

Vaccination Coverage by Antigens (Figure Jhelum -a):

In Jhelum district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 95.1 % for OPV-1 and BCG (This was also verified by presence of scar). Minimum coverage was for Measles, which was 85.2 %. Coverage of OPV-1 dropped from 95.1 % to 90.1 % for OPV-3 and that of DPT from 95.1 % to 89.2 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 41 % for all antigens. However here, the maximum is for OPV 1 and DPT 1 (40.4 %) and minimum for measles (34 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 84.2 %.

Vaccination Coverage with Gender Breakup (Figure Jhelum b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (83.19 % vs 88.89 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (93.8 vs 96.7 for OPV-1 and 94.7 % vs 95.6 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (90.3 % vs 90 % for OPV 3 and 88.5 % vs 90 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Jhelum -e):

Except for OPV 3 where reported coverage was 91 %, in all other vaccinations reported coverage was more than 92 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 95.1 % for BCG and OPV 1 to minimum of 85.2 % for Measles. On the basis of reported figures the coverage dropped from 108 % to 91 % for OPV and from 95.1 to 90.1 % for evaluated figures. Similarly Reported coverage dropped from 109 % to 92 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 95.1 % to 89.2 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Jhelum - f)

Total TT coverage of mothers (by history and card) in Jhelum district ranged from 77.6 % for TT-1 to 2 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 20.9 % to 0.5 %

RAWALPINDI DISTRICT

Vaccination Coverage by Antigens (Figure Rawalpindi -a):

In Rawalpindi district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 94.3 % for OPV 1. Minimum coverage was for Measles, which was 77.6 %. Coverage of OPV-1 dropped from 94.3 % to 86.5 % for OPV-3 and that of DPT from 89.6 % to 85.4 % for the 1st and 3rd dose. If we take into account only the records of vaccination on vaccination cards then the coverage is less than 38 % for all antigens. However here, the maximum is for OPV-1 (37.5 %) and minimum for measles (26.6 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 74 %.

Vaccination Coverage with Gender Breakup (Figure Rawalpindi b, c, d)

For the children where immunization status was determined by cards and history, there was a difference of 7 ½ % between the males and females in favor of male (79.65 % vs 72.15 %). This is a small difference and indicates that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. It may be worth mentioning that Rawalpindi is a district which is going more in favor of male otherwise mostly females have a better percentage of coverage. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are comparatively less significant than over all male female difference (95.6 vs 92.4 for OPV-1 and 91.2 % vs 87.3 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the difference is almost the same (88.5% and 83.5 % for OPV-3 and 87.6 % vs 82.3 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Rawalpindi -e):

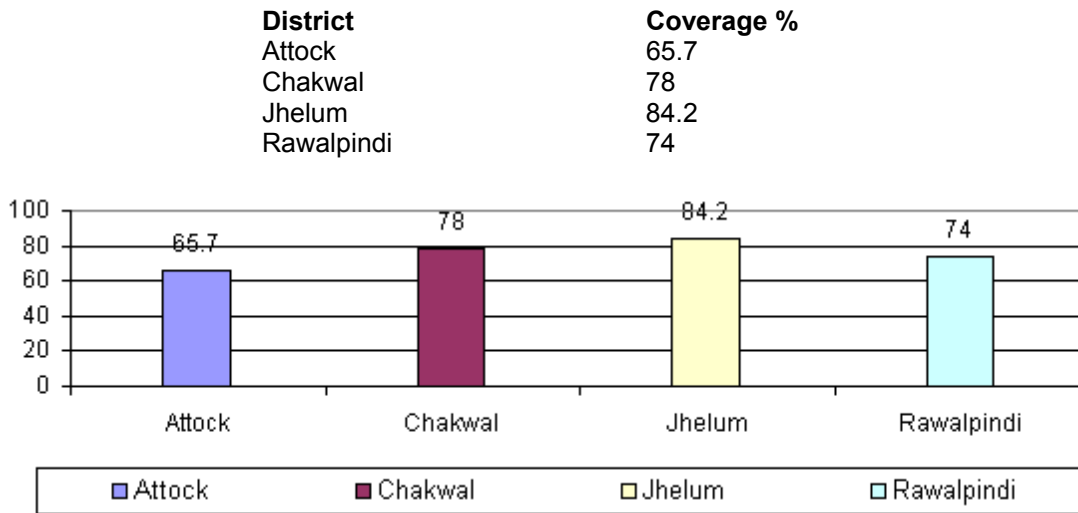
Except for Measles where reported coverage was 88 %, in all other vaccinations reported coverage was more than 90 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 94.3 % for OPV 1 to minimum of 77.6 % for Measles. On the basis of reported figures the coverage dropped from 101 % to 92 % for OPV and from 94.3 to 86.5 % for evaluated figures. Similarly Reported coverage dropped from 101 % to 92 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 89.6 % to 85.4 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Rawalpindi - f)

Total TT coverage of mothers (by history and card) in Rawalpindi district ranged from 76.8 % for TT-1 to 19 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 11.1 % to 9.5 %

RAWALPINDI DIVISION

Following are the district-wise coverage in the division of Rawalpindi:



BAKHAR DISTRICT

Vaccination Coverage by Antigens (Figure Bakhar -a):

In Bakhar district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 92.3 % for OPV 1. Minimum coverage was for Measles, which was 80.7 %. Coverage of OPV-1 dropped from 92.3 % to 85 % for OPV-3 and that of DPT from 91.8 % to 85 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 69.1 % for all antigens. However here, the maximum is for OPV 1 (69.1 %) and minimum for measles (60.4 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 77.3 %.

Vaccination Coverage with Gender Breakup (Figure Bakhar b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (77.39 % vs 75 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (92.2 vs 92.4 for OPV-1 and 92.2 % vs 91.3 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (86.1 % vs 83.7 % for OPV 3 and 86.1 % vs 83.7 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Bakhar -e):

The comparison between the reported and evaluated is not much of difference. The percentage difference is just between 8-9 %, which shows that there is not much inflated reporting in this district. This thing needs to be appreciated and encouraged.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Bakhar - f)

Total TT coverage of mothers (by history and card) in Bakhar district ranged from 77.9 % for TT-1 to 5 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 47.3 % to 4.1 %

KHUSHAB DISTRICT

Vaccination Coverage by Antigens (Figure Khushab -a):

In Khushab district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 98.1 % for OPV 1. Minimum coverage was for Measles, which was 87.8 %. Coverage of OPV-1 dropped from 98.1 % to 91.1 % for OPV-3 and that of DPT from 97.7 % to 91.1 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 64 % for all antigens. However here, the maximum is for OPV 1 and DPT 1 (63.4 %) and minimum for measles (56.3 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 85.4 %.

Vaccination Coverage with Gender Breakup (Figure Khushab b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (88.98 % vs 83.16 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (97.5 vs 98.9 for OPV-1 and 96.6 % vs 98.9 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (92.4 % vs 89.5 % for OPV 3 and 92.4 % vs 89.5 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Khushab -e):

Except for OPV 3 and DPT 3 where reported coverage was 113 %, in all other vaccinations reported coverage was more than 118 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 131 % for OPV 3 and DPT 3 to minimum of 113 % for OPV and DPT 3. On the basis of reported figures the coverage dropped from 131 % to 113 % for OPV and from 98.1 to 91.1 % for evaluated figures. Similarly Reported coverage dropped from 131 % to 113 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 97.7 % to 91.1 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Khushab - f)

Total TT coverage of mothers (by history and card) in Khushab district ranged from 81 % for TT-1 to 8.2 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 38.5 % to 3.2 %

MIANWALI DISTRICT

Vaccination Coverage by Antigens (Figure Mianwali -a):

In Mianwali district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 94.7 % for OPV 1. Minimum coverage was for Measles, which was 70.7 %. Coverage of OPV-1 dropped from 94.7 % to 78.7 % for OPV-3 and that of DPT from 94.1 % to 78.7 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 52.1 % for all antigens. However here, the maximum is for BCG (52.1 %) and minimum for measles (38.8 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 67 %.

Vaccination Coverage with Gender Breakup (Figure Mianwali b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (66.67 % vs 68.83 %). This indicated that both males and females children were equally reached by the program or that the mothers / families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (93.7 vs 96.1 for OPV-1 and 92.8 % vs 96.1 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (80.2 % vs 76.6 % for OPV 3 and 79.3 % vs 77.9 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Mianwali -e):

Except for Measles where reported coverage was 108 %, in all other vaccinations reported coverage was more than 109 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 125 % for BCG to minimum of 108 % for Measles. On the basis of reported figures the coverage dropped from 124 % to 117 % for OPV and from 94.7 to 78.7 % for evaluated figures. Similarly Reported coverage dropped from 117 % to 112 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 94.1 % to 78.7 % for same antigen.

Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Mianwali - f)

Total TT coverage of mothers (by history and card) in Mianwali district ranged from 74.2 % for TT-1 to 2.1 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 40 % to 1.6 %

SARGODHA DISTRICT

Vaccination Coverage by Antigens (Figure Sargodha -a):

In Sargodha district, maximum coverage as determined by entries on vaccination cards and where cards were not produced by history was 95.1 % for BCG. Minimum coverage was for Measles, which was 77.1 %. Coverage of OPV-1 dropped from 94.1 % to 82 % for OPV-3 and that of DPT from 92.7 % to 79 % for the 1st and 3rd dose. If we take into account only the record of vaccination on vaccination cards then the coverage is less than 54 % for all antigens. However here, the maximum is for BCG (53.2 %) and minimum for measles (37.6 %). However it is reasonable to assume that the history of vaccination given by mothers / families was reliable and hence the figure for cards & history can be dependable. Children who were fully immunized irrespective of the immunization schedule are 71.7 %.

Vaccination Coverage with Gender Breakup (Figure Sargodha b, c, d)

For the children where immunization status was determined by cards and history, there was no significant difference between the males and females (72.64 % vs 68.69 %). This indicated that both males and females children were equally reached by the program or that the mothers/families did not discriminate between male and female children for getting them vaccinated. If we look at the OPV 1 and DPT 1 for males and females, then the percentages are almost equal (94.3 vs 93.9 for OPV-1 and 93.4 % vs 91.9 % for DPT 1). If the percentages of the males and females receiving the third dose of the same antigens are compared then the percentages are again equal (81.1 % vs 82.8 % for OPV 3 and 78.3 % vs 79.8 % for DPT 3).

Coverage Comparison between Reported & Evaluated Figures (Figure Sargodha -e):

Except for Measles where reported coverage was 102 %, in all other vaccinations reported coverage was more than 103 %. On the other hand the figures on the basis of evaluation ranged from a maximum of 118 % for BCG to minimum of 102 % for Measles. On the basis of reported figures the coverage dropped from 113 % to 103 % for OPV and from 94.1 to 82 % for evaluated figures. Similarly Reported coverage dropped from 113 % to 103 % DPT-1 and DPT-3 where as for evaluated figures it dropped from 92.7 % to 79 % for same antigen.

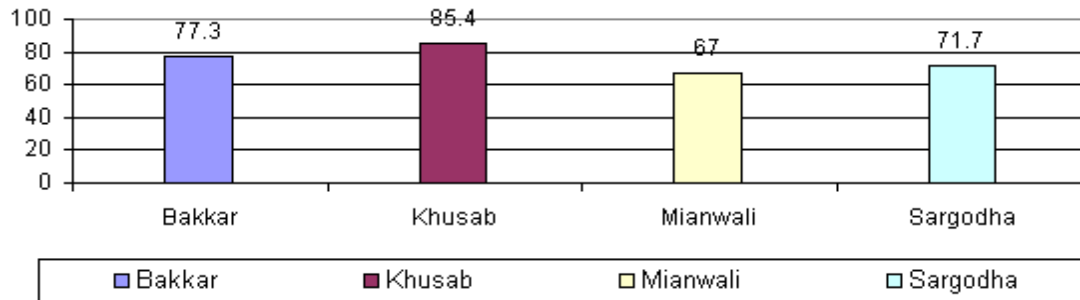
Coverage of Mothers with Tetanus Toxoid (TT) Dosage (Figure Sargodha - f)

Total TT coverage of mothers (by history and card) in Sargodha district ranged from 79.3 % for TT-1 to 4.3 % for TT-5. However if only those vaccinations are taken into account where cards were present, then the coverage drops from 31.7 % to 1.4 %

SARGODHA DIVISION

Following are the district-wise coverage in the division of Sargodha:

District	Coverage %
Bakkar	77.3
Khusab	85.4
Mianwali	67
Sargodha	71.7



D. AWARENESS ABOUT THE IMMUNIZATION PROGRAM AMONG THE MOTHERS AND COMMUNITY LEADERS

During the survey, the questionnaire designed also contained questions assessing the awareness and practices regarding the Immunization Program. We have made use of some of them for checking the internal consistency of the data while others were used to describe the sociodemographic profile of the population surveyed.

Some the questions however, were also asked to depict awareness and the level of the knowledge of the mothers, in particular, and community leaders, in general.

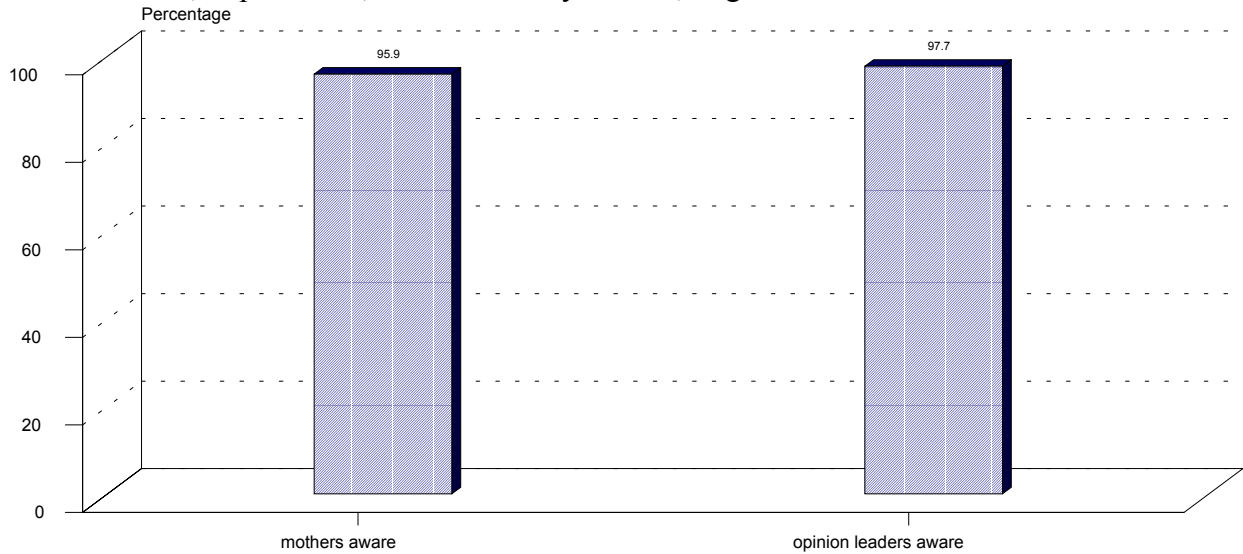


Fig 24. Mothers and Opinion leaders - when asked if they were aware of the immunization program.

The mothers were asked about the source of information for immunization programs (Fig 1a) when 95.9% of them were aware of it. The health personnel were an effective source followed by the mosques and TV. The information reaching mothers was effectively communicated since a high proportion of the mothers knew that their children needed vaccination more than three times to be protected against the six deadly diseases. The awareness about the immunization was as high as 97.7% among the opinion leaders (Fig 24). Despite the fact that majority of the mothers knew the importance of vaccination, there were constraints and obstructions which caused nearly thirty percent of the mothers to default. The reasons for the default are shown in Fig 25. The main reason was that either the need for multiple doses was not known (18%) or the vaccinator was absent (17%) or the mother was busy (11 %).

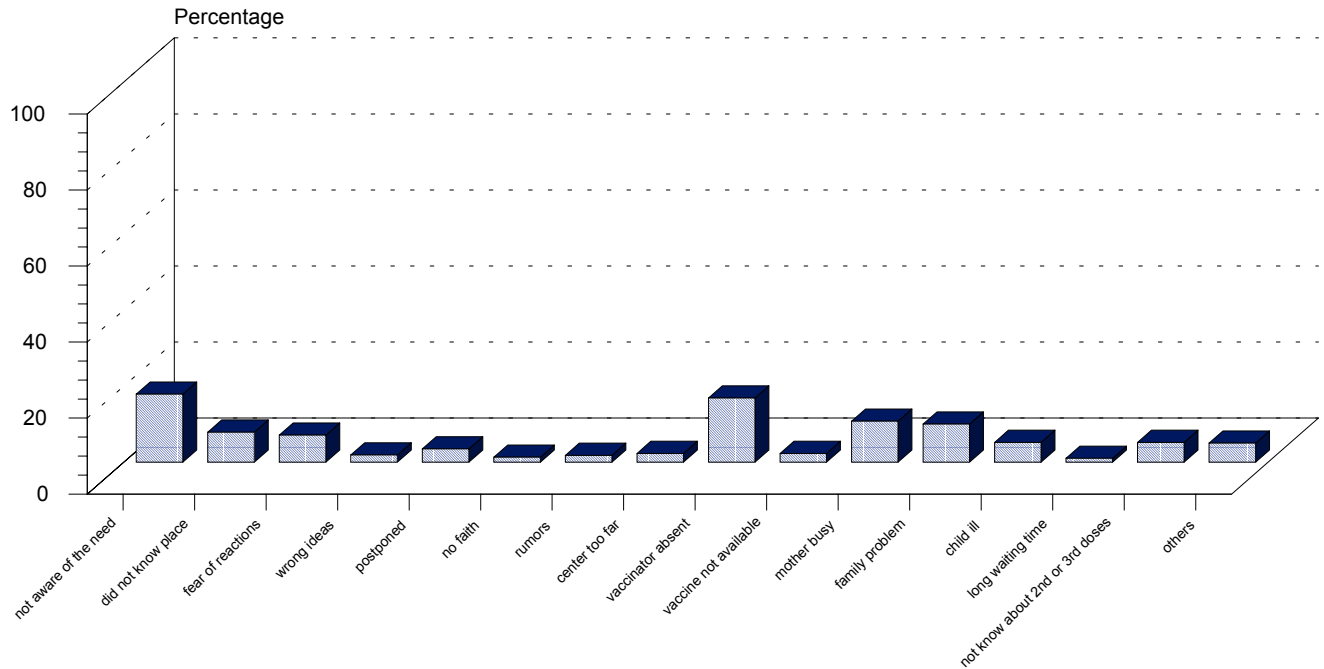


Fig 25. Primary reason for not/partially vaccinating their children

When the mothers were asked how could immunization be beneficial to the child, more than 70% said that it protected the child from six diseases (Fig 26). Those who replied in a negative about the benefits of immunization, were of the opinion that vaccination was not effective (34%), were afraid of reactions (27%), sterility (13%) or had other reasons (15%) to fear vaccinations (Fig 27).

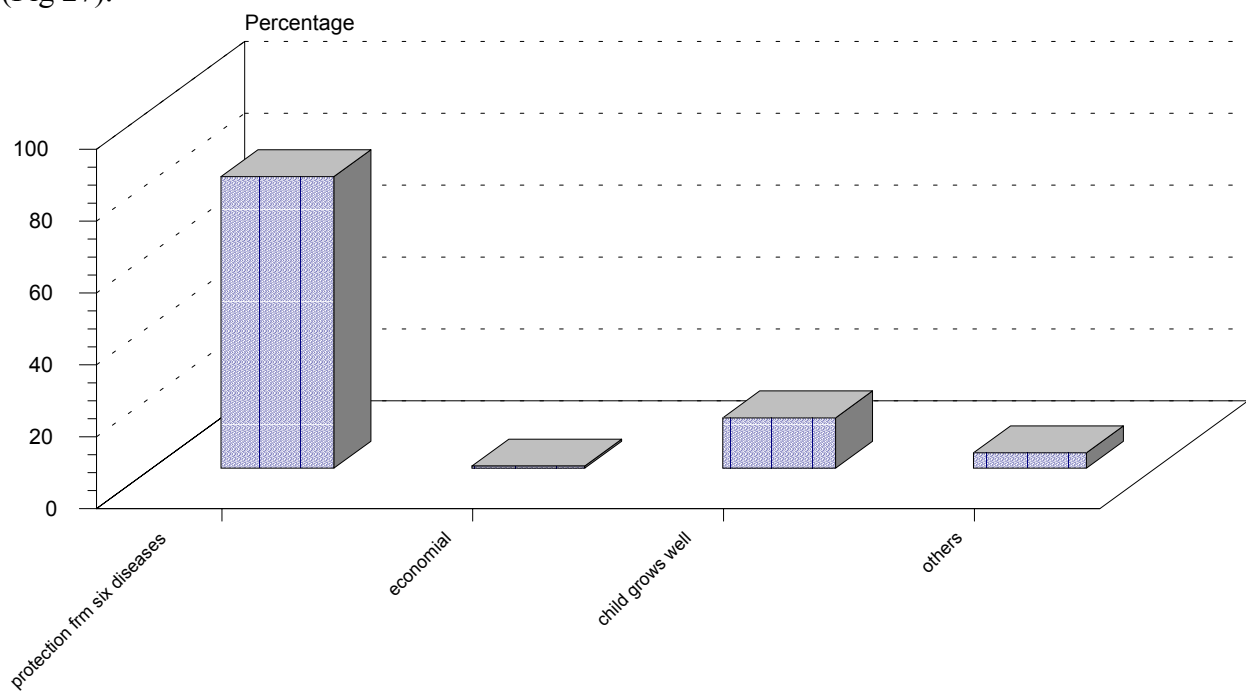


Fig 26. Opinion of the mothers regarding how immunization can be of benefit to the children.

Fig 28 describes that a majority of mothers thought vaccination to be beneficial, more than 60% were willing to go far for vaccination while almost the same proportion of these

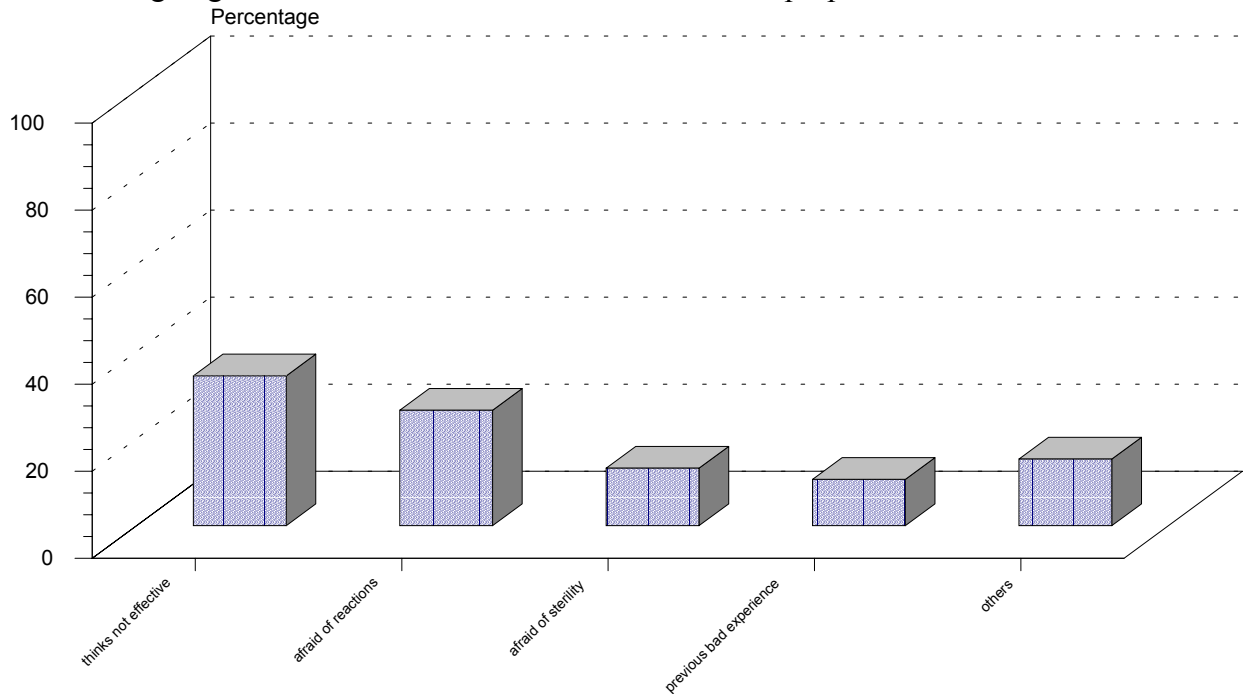


Fig 27. Reasons for considering immunization not beneficial for their child.

mothers were aware about maternal vaccination, their own immunization with TT remained to be uplifted.

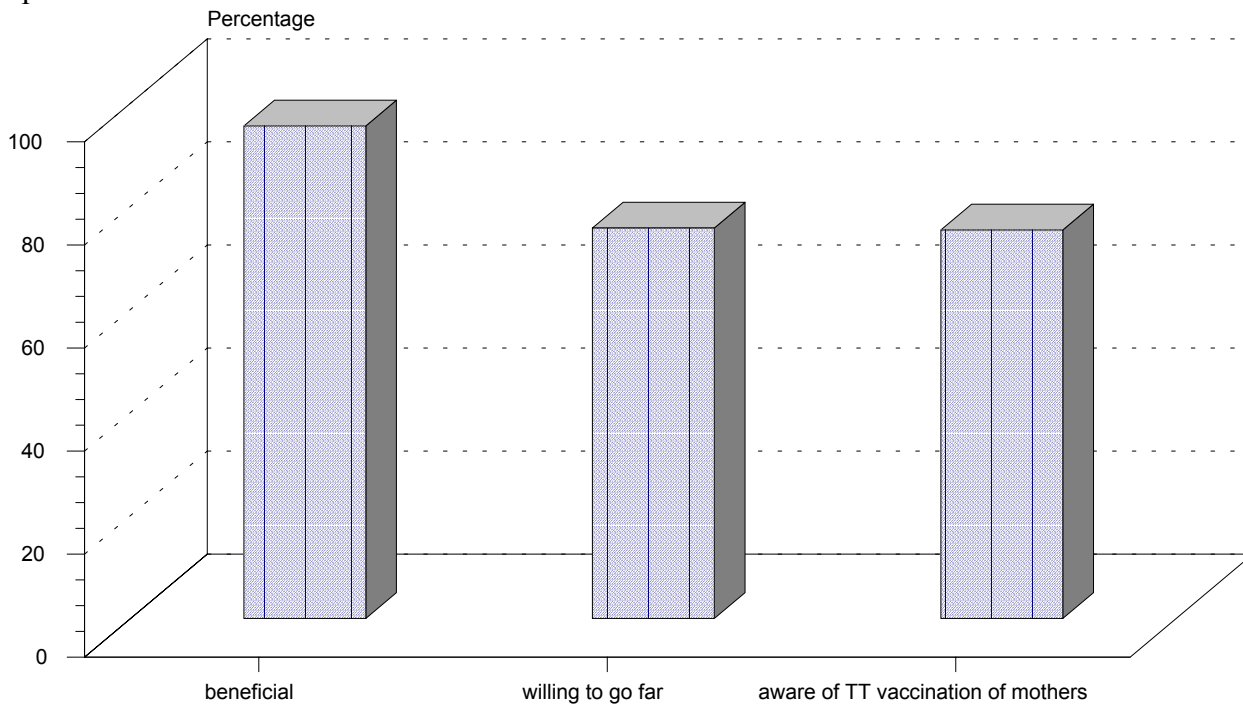


Fig 28. Mother's knowledge about vaccination being beneficial and if she was willing to go far for vaccination. Her awareness about TT vaccination is also assessed.

The opinion leaders were also highly aware of the immunization program, 64% knew that the child needs atleast three or more than three times to be vaccinated so that he could be protected against the six diseases. Twenty-eight percent of these leaders did not know the need of multiple doses (Fig 29). Even 84% of the opinion leaders knew about

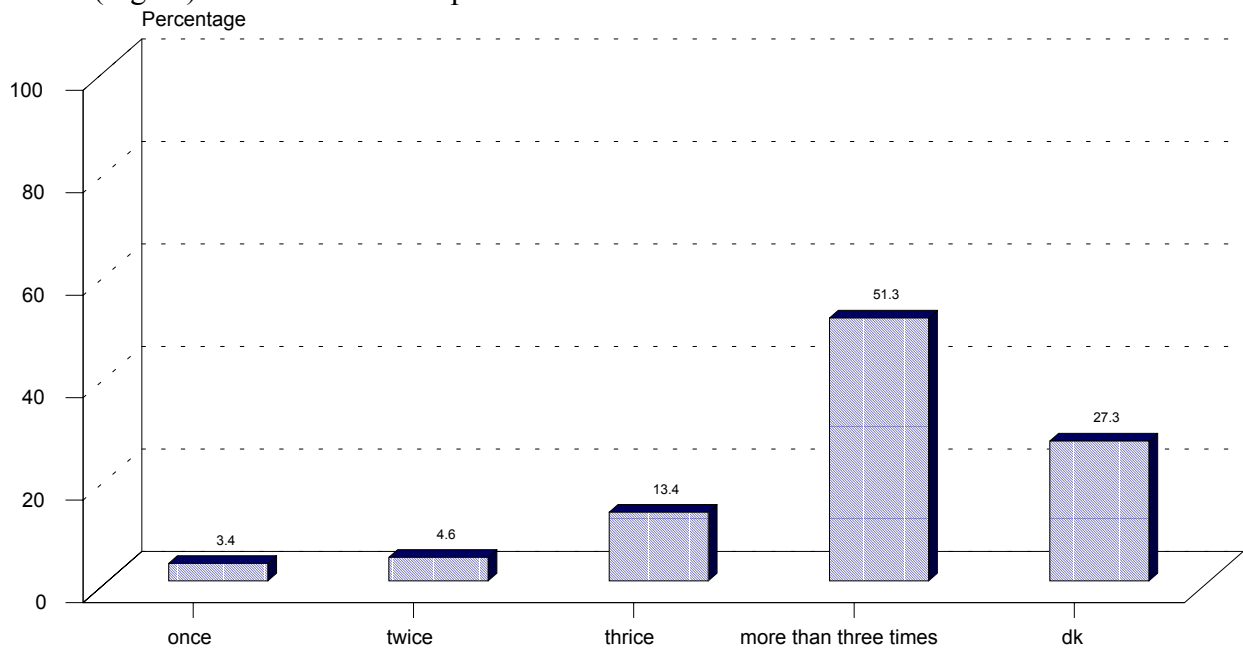


Fig 29. Opinion leaders - if they knew how many times a child should be vaccinated before he/she is protected.

the importance of TT vaccination to the mothers and 66% of them knew that it will protect both the mother and the child (Fig 30). A large majority (99%) of them believed vaccination to be beneficial to the child since it would protect him against the six diseases (Fig 31).

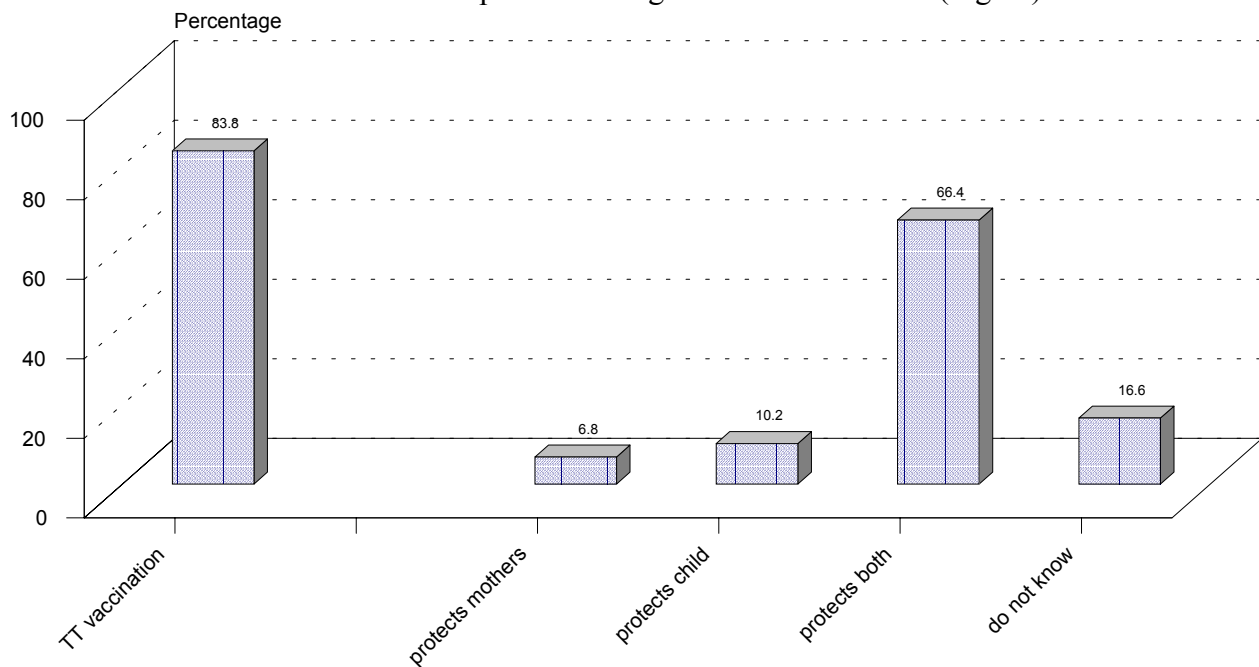


Fig 30. Opinion leaders - if they knew about TT vaccination and if it protects the child, mother or both

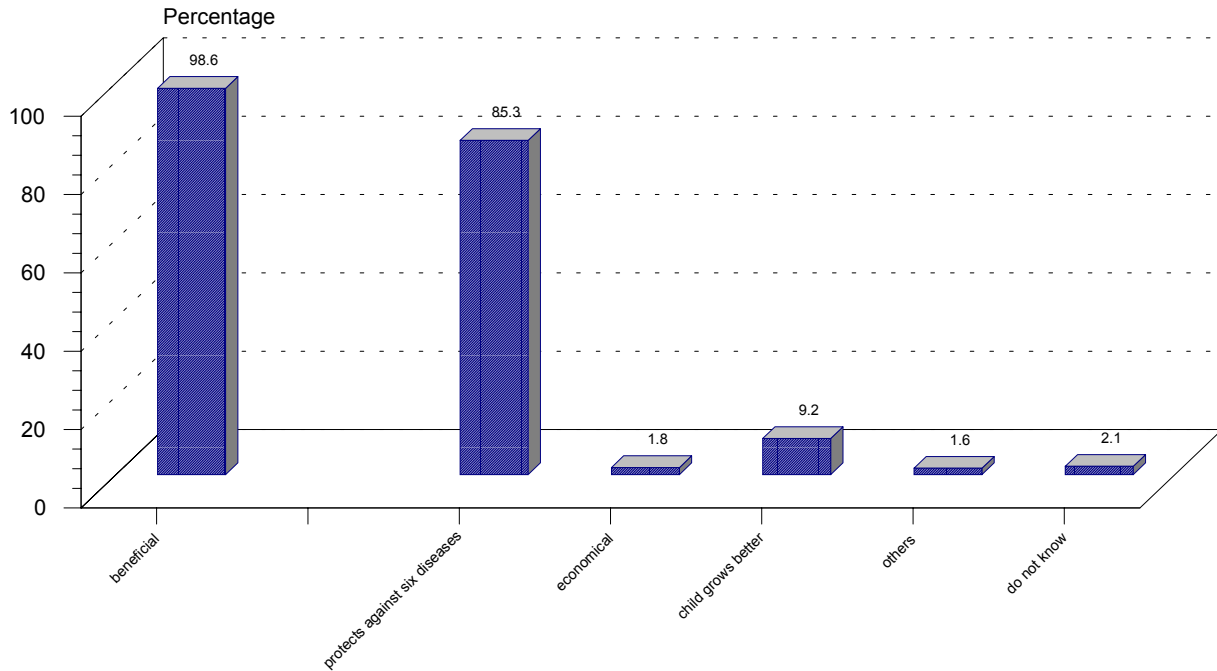


Fig 31. Opinion leaders - responses when asked if vaccination was beneficial to the child and reasons for that.

E. ATTITUDES AND PRACTICES OF MOTHERS AND OPINION LEADERS TOWARDS THE IMMUNIZATION PROGRAM

The mothers when asked the preferred place of vaccination for their children, 77% of them wanted their child to be vaccinated at home (Fig 32) and 19% preferred to go to an EPI center. More than 70% of the mothers preferred morning time for vaccination while 22% said any time was convenient to them (Fig 33). If they could have their wish come true and a vaccinator was visiting them at home, they (65%) preferred that he came in the mornings while, 28% said the vaccinators could come at any time (Fig 34).

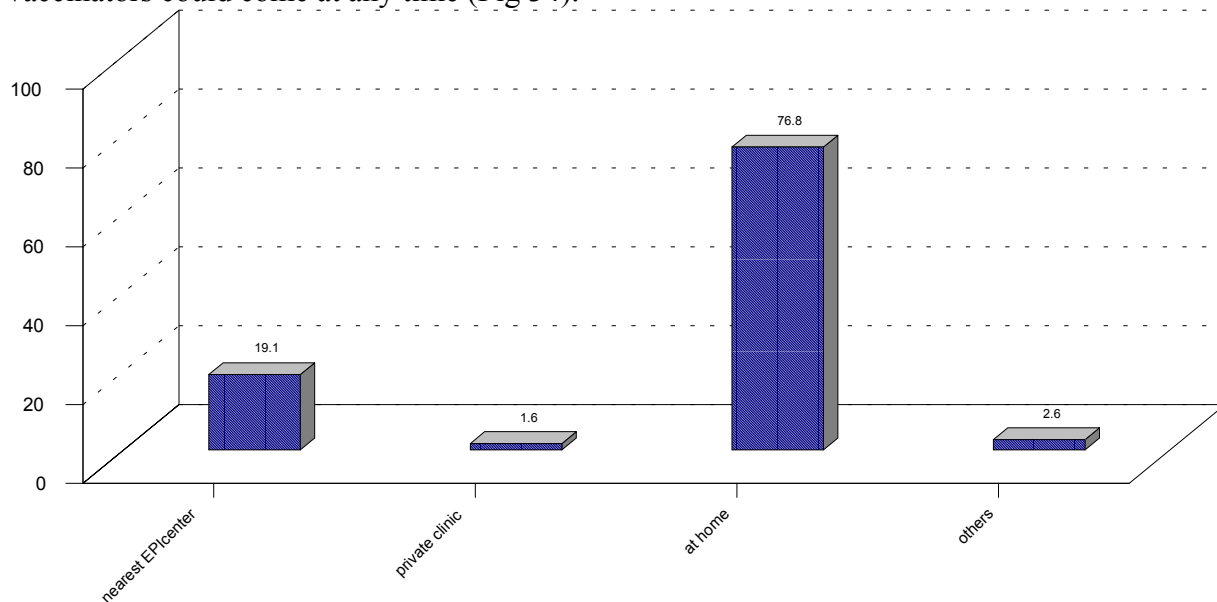


Fig 32. Where would you like your child to be vaccinated at?

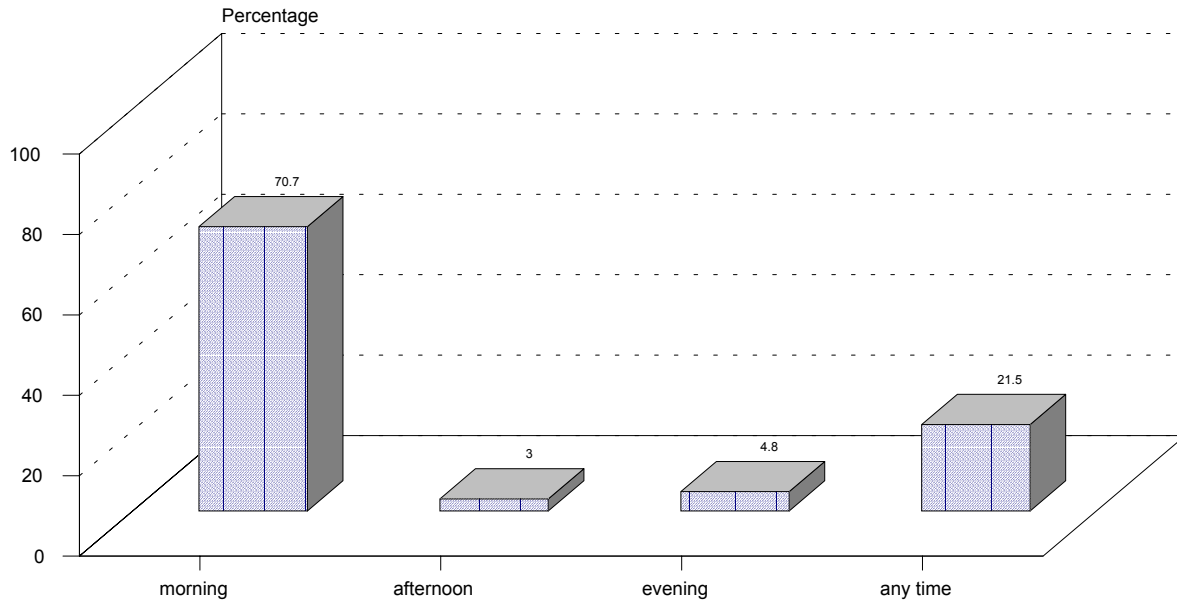


Fig 33. *If you have to go to a vaccination center, which time would you prefer to go?*

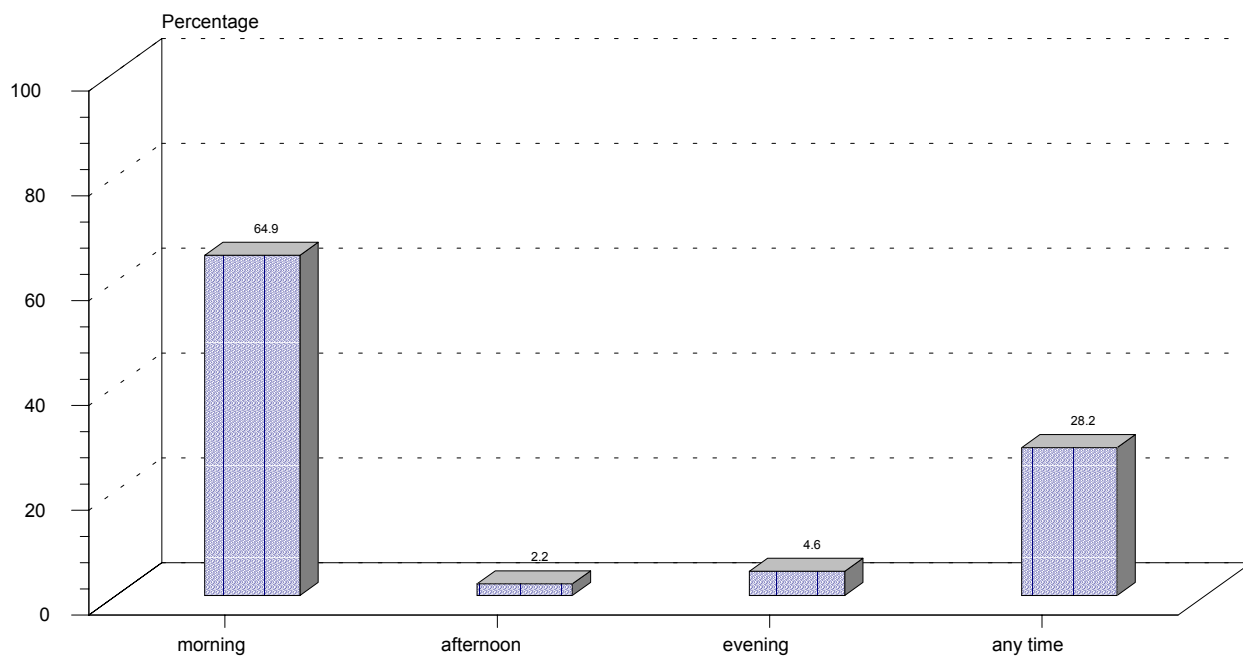


Fig 34. *Which time would you prefer the vaccinator to come to your house for vaccination?*

A vast majority (90%) of the mothers thought that the vaccinators were good in their attitude towards them. This was also agreed upon by the opinion leaders (92%), (Fig 35).

Although 58% of the leaders informed that the vaccinators were coming to their areas once every month for vaccination, 18% said they came for routine vaccination and 9% met them on national immunization days only (Fig 36). Nearly 50% had an EPI center in

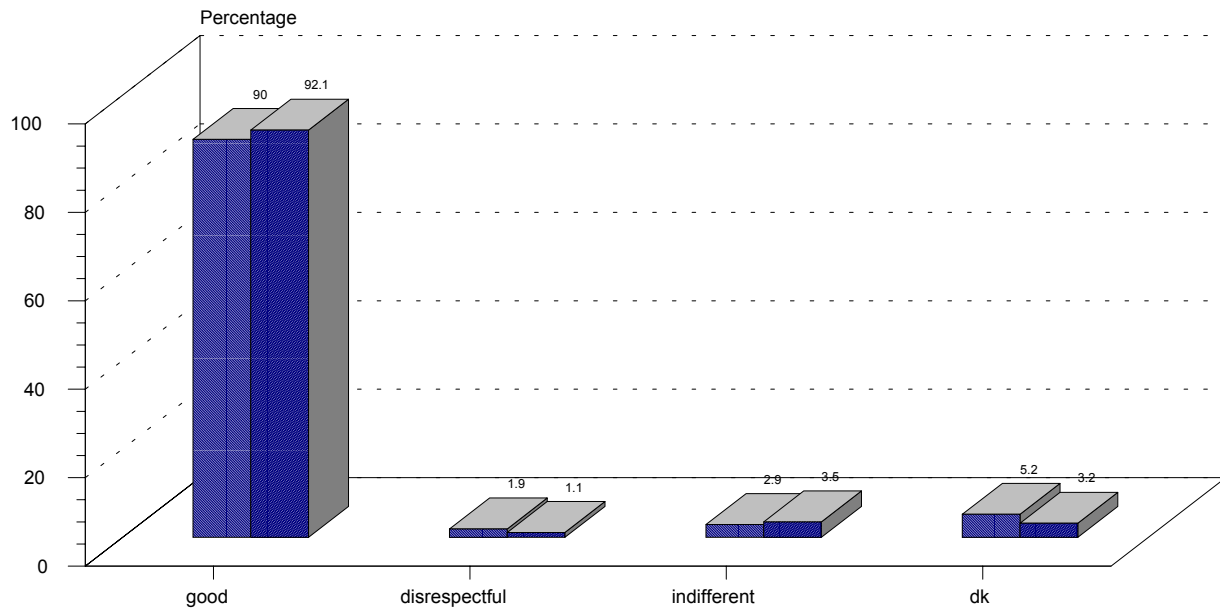


Fig 35. General attitude of the vaccinators as seen by the mothers and the opinion leaders.

their locality although a small minority (4%) did not know if there was any center close by (Fig 37).

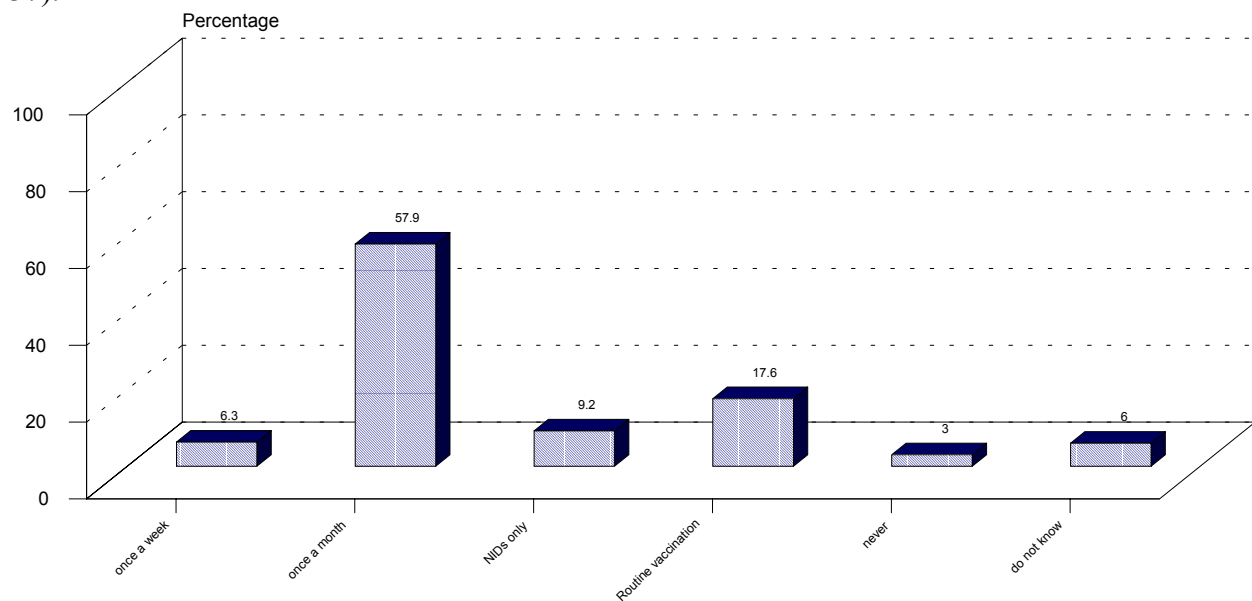


Fig 36. Opinion leaders - asked if they knew how often did the vaccinators come for vaccination.

When the opinion leaders were asked how did they contribute towards the improvement of the immunization program, 43% replied that they had spread knowledge among their community members while 18% of them brought the children for vaccination and 14% said they had supervised the work while 19% did nothing to further improve the program (Fig 38).

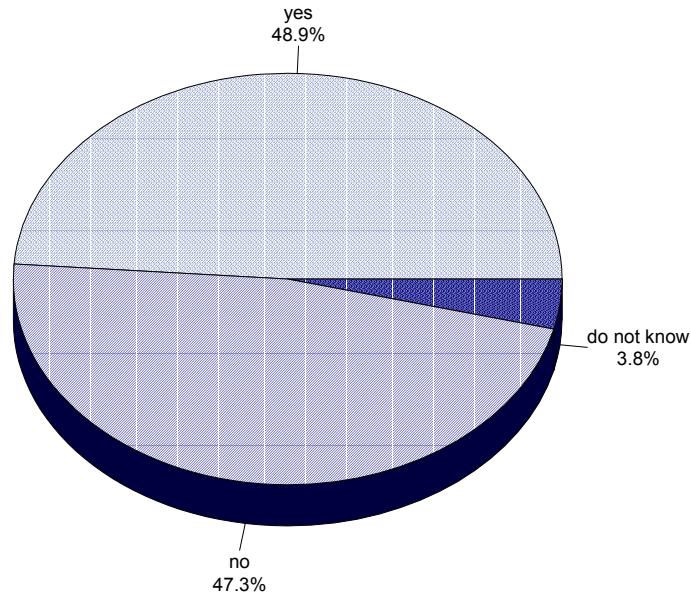


Fig 37. Opinion leaders - if they knew about the EPI centre in their locality

The awareness of our mothers is important for the success of any changes in the immunization programs. As shown in Fig 39, the access of a mother to a newspaper may be less effective as compared to the TV and Radio to which she has a fair amount of access.

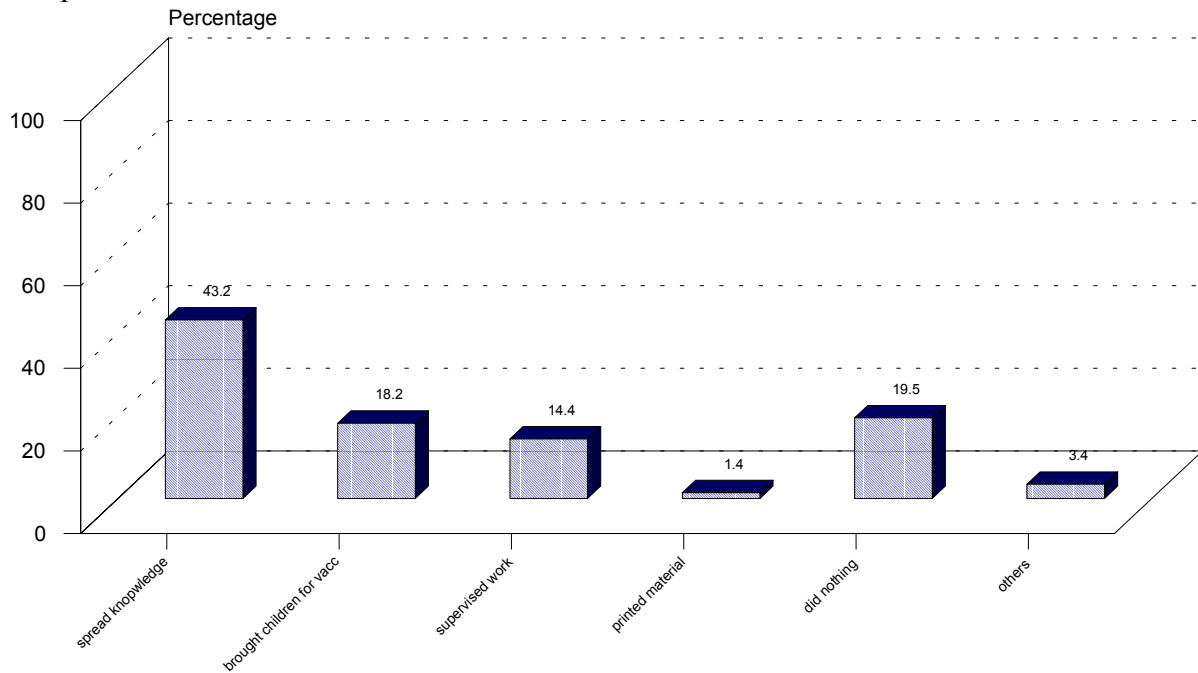


Fig 38. Opinion leaders - when asked how did they contribute towards the improvement of vaccination.

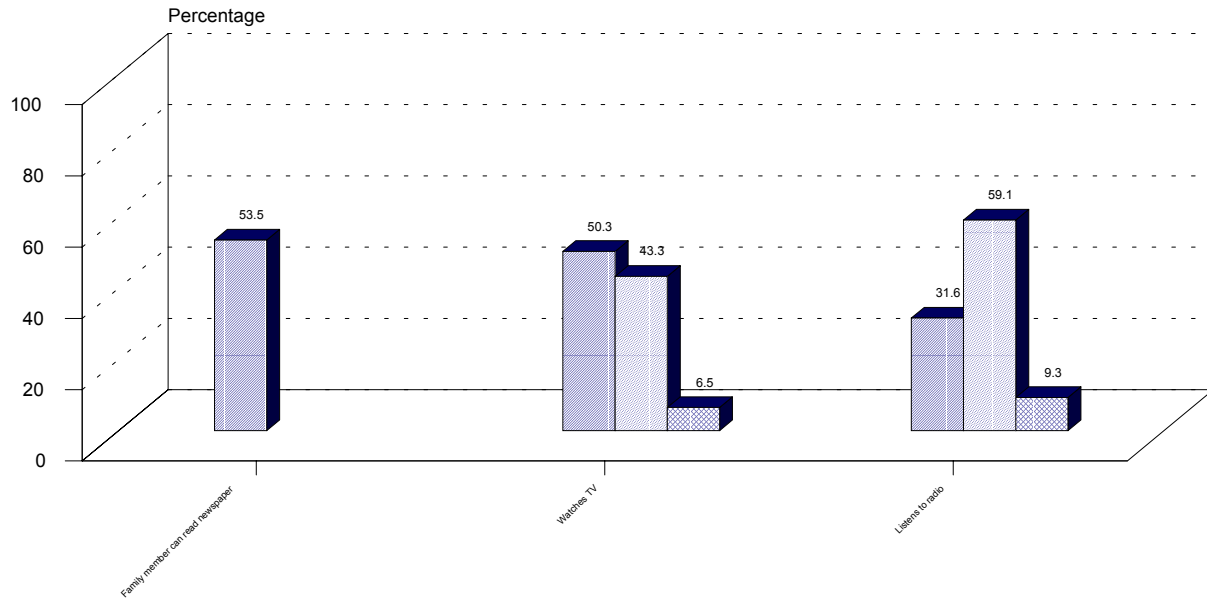


Fig 39. Access of the mothers to Newspapers, TV and Radio

4. SYSTEM ANALYSIS

The Core Team of Consultants conducted structured interviews with the policy level managers and officials of the EPI program (detailed methodology has been described earlier). Discussions were held with the Secretary Health, Director General Health Services, Additional Secretary Health (Technical), Director EPI along with his provincial program team. *TCC* Teams also conducted detailed interviews with the operational staff including Divisional Directors Health Services, District Health Officers, Deputy District Health Officers, District Supervisors Vaccination (DSV), Assistant Supervisors Vaccination, Medical Officers, Vaccinators and CDC Supervisors. International donor Agencies like UNICEF, WHO and World Bank were also visited.

4.1 Objectives

Objectives of the qualitative search were to assess the efficiency and effectiveness of the DOH in terms of mobilization and utilization of resources for routine EPI activities. We also wanted to identify factors that contributed towards success and short comings/drawbacks of the Crash Program implemented by the Department in July-October 1999, and to draw lessons for future interventions.

4.2 Issues and Recommendations

During discussions with policy makers, operational managers and the field staff, number of issues were raised which have been grouped under various components as follows:

F Program Resources:

Adequate, appropriate and timely availability of resources has been considered necessary for efficient and effective implementation of the EPI program. Following issues were highlighted:

- *Interrupted supply of vaccines, injection equipment etc.:* Presently, all the supplies are procured at the federal or provincial level and distributed to the districts with frequent complaints of erratic supply thus adversely affecting the Program.
- *Inadequate and worn out Cold Chain Equipment.*
- *Restricted mobility of the supervisory and field staff due to shortage of vehicles and POL.*
- *Mal-deployment of vaccinators*

Recommendations

It is recommended that:

- Distribution system for the vaccines needs to be redesigned with storage facilities at the divisional level. It was learnt that the DOH has already established Cold Rooms at the divisional headquarters. It is recommended that those facilities may be made functional.
- Procurement of syringes and supplies may be decentralized to the provincial directorate level.
- Reserve stocks of essential EPI equipment and supplies should be maintained at the MSD

- Worn out Cold Chain equipment at the peripheral level may be replaced following appropriate need assessment.
- Operational vehicles may be supplied to the supervisory and field staff while ensuring their proper use.
- There are instances of mal-deployment of vaccinators in the field. This needs correction through administrative measures

G Technical Aspects:

EPI has a number of issues related to technical aspects including skills and practices of the program staff from provincial to the grass root levels. During discussions series of issues related to this area were raised which are as follows:

- *Inadequate training and deficient skills of the staff regarding various aspects of EPI Program:* There is no regular training program for all categories of EPI staff, though there is a well-established training institution network of PHDC - DHDCs operational in the province. WHO training manuals exist for training different categories of EPI staff. The sporadic trainings offered were not focused on skill building.
- *Lack of knowledge and practice regarding maternal TT immunization at the lower levels:* Many health care providers lack knowledge regarding TT vaccination schedule. Moreover, deficient communication to the pregnant women regarding TT vaccination poses another hurdle.
- *Knowledge and practice regarding cold chain maintenance amongst the operational staff is limited:* Field staff some time lacks the very basic knowledge and skills to operate and maintain the cold chain. Recording and maintaining vaccine temperatures have been cited as a problem in the field.
- *Unreliable reporting and information system.*
- *Ineffective supervision:* The managers and supervisory staff lacks supportive supervision concept. Most supervisors lack the technical knowledge essential for effective supervision. Stress is more on the administrative and side issues rather than the technical ones.

Recommendations

TCC recommends the following:

- **Training and Skill building:** It is recommended that appropriate and focused training programs may be initiated for different categories of EPI staff and skill building through hands on training. WHO manuals may be used for such trainings.
- Special emphasis on maternal TT during EPI Training programs
- Focused training on cold chain maintenance and skill building to operate & maintain the cold chain equipment
- Ineffective surveillance e.g. AFP surveillance. Though surveillance mechanism is improving

but the people involved lack proper training.

- Realistic reporting may be encouraged. De-linking coverage with penalization. Setting of reasonable targets and integration of EPI reporting with the HMIS.
- The capacity of supervisors needs enhancement on technical aspects of the program. Supportive, focused and meaningful supervisory skills building need to be incorporated in training programs designed for the supervisors.

H Program Management and Organization

The EPI is considered as a vertical program having inputs from the federal level. Provincial program management, district level management and outreach levels have important roles to play. There are a number of issues pertaining to this component.

- *Lack of coordination:*

Intra Departmental operational level: Organizational communication is deficient in a number of ways and it was felt that key functionaries like DHO and MS DHQ, DDHO and MS THQ, lack coordination amongst them, though their supervisor (i.e. Divisional DHS) is the same.

Inter Departmental: Lack of coordination between various departments working for similar objectives (e.g. Department for Population Welfare, Department of Education, Department of Social Welfare).

- *Ill-defined roles and responsibilities:* Though in principal it has been agreed that the Medical Officer in charge of the health facility shall be responsible for the EPI coverage within his catchment area, the DHO office is still managing the field staff directly. Clear-cut job descriptions are lacking at all levels making the division of roles and responsibilities ambiguous.
- *Deficient micro planning at the district level:* People responsible lack the knowledge of proper planning and are usually unaware of its real importance.
- *Limited authority:* District level managers and field officers are not sufficiently authorized to get their equipment repaired or replaced.
- *Institutional mechanisms to implement checks and balances in the system are weak:* Accountability is patchy and initiating disciplinary actions against the non-performers is not an easy task. The Annual Confidential Reports (ACR) system is one of the institutional tools to gauge the performance. Unfortunately ACR is neither annual nor confidential resulting in lack of confidence in the mechanism.
- The system does not offer any *performance-based incentives* to the staff either in form of written recognition or monetary benefit. Salary increments or posting and transfer to better places are not linked to the work performance. This affects the attitude and morale of the staff, as excellent or poor performance has no effect on immediate gains or losses.

- *Inadequate management capacity at different levels:* The health facility staff responsible to interact with the communities and initiate their involvement are *neither trained nor motivated* for participatory and communal approach.
- *Verticality of the program management & reporting:* Horizontal linkages between the various programs of the health sector (e.g. malaria, EPI and MCH) are weak.

Recommendations

It is recommended that:

- Coordination among the preventive and curative staff may be enhanced and their mutual interaction must be encouraged. Staff from hospitals must be involved in the field activities, like disease surveillance.
- Inter Departmental coordination may be ensured through frequent coordination meetings.
- Job Descriptions for all categories of staff need to be developed and implemented.
- Training of relevant staff at the district level on program planning, management and implementation
- Institutional reforms with a focus on district based health system

I Communication and Community Participation:

EPI Program involves personal motivation, public awareness and social mobilization, therefore requires extensive inter-personal and mass communication interventions. Emissions to the component include effective communication strategies, appropriate IPC skills of the staff, cross sectoral and community involvement.

- *IEC for prevention or management and for promotion of health:* IEC is given very low priority and budgets. Vague, unclear, incomplete or mixed messages are promoted which fails to convey the directive to families and communities.
- *Deficient IPC skills of the program staff.* Staff is either not specifically trained or requires refreshers.
- *Lack of effective community involvement mechanisms:* Involvement of the community people in planning, implementation and monitoring of health services is minimal.
- *Non-responding and insufficient promotional material:* Promotion material generally developed at central level and the field staff involvement is minimal. Proper training program for the use of material is virtually non-existing.

Recommendations

- Appropriate training program may be instituted for trainings and re-training of the EPI staff.
- Civil Society may be involved in program advocacy, planning and implementation through CBOs, NGOs and community leaders. LHWs have formed Health Committees, which can

play an important role in program propagation for community involvement.

- Involvement of field staff should be ensured in the preparation of promotional material for the program. Regional preference should be given weightage while launching the media campaign.

J Monitoring, Evaluation and Feedback:

EPI strategies need consistent feedback to remain responsive to the changing needs. Issues relating to M&E are as follows:

- *Reporting compliance and reliability:* It is reported to be a major issue during the program implementation.
- *Irregular monitoring:* Although there is a defined monitoring system, starting from federal level to the tehsil level but the impact of the monitoring is not visible.
- *Inefficient use of collected information:* Visiting supervisors are not in the habit of carrying pertinent information already available while visiting the health facilities. The decisions are therefore whimsical rather than evidence based.

Recommendations

- Training in monitoring and evaluation and use of information needs to be propagated through comprehensive training programs for the staff and workers.

4.3 EPI Crash Program

- Policy level and operational staff was aware of the **Crash Program** and narrated that Government of the Punjab (GoPb) decided to initiate a crash program for the EPI from July to October 1999 to improve the EPI coverage in the province. DOH, provided full support to the crash program from all relevant quarters of the government and with full involvement of the communities. The objectives for the EPI Crash Program were well known to the respondents.
- The district administration was fully involved to make the program a success. All the divisional and district administrators requested to support the Health Department in its operations for the successful implementation of the Crash Program.
- The Local Government & Rural Development Department also coordinated with health department through their medical wings of District Councils and Municipalities. It was acknowledged that UNICEF and WHO contributed significantly to the campaign to makeup the deficiencies.
- Discussing the details of Crash Program, the Team was informed that the Health Department made *special arrangements* for the procurement and distribution of syringes and vaccines. The Directorate General of Health Services, Punjab made a special circular outlining the

activities and ensured that efforts are replicated at all level line offices of the Health Department. It is seen that almost entire health machinery of the Public Sector has been mobilized and accordingly the resources have been dedicated to the Crash Program for EPI.

- *Special communication strategy* was adopted, which included various measures including TV spots, radio spots, radio talks, advertisements in all leading newspapers, and weekly press releases by all DHSs and DHOs were organized. Banners and pamphlets were displayed and distributed at vaccination points. Other measures to increase the social awareness like walks were organized at all levels of implementation. Similarly, inter-personal communication (IPC) strategies adopted at all levels including announcements in mosques, motivation speeches in religious functions and influencing the village and community elders.
- The District Health Officers, who were interviewed held a strong opinion that the Crash Program contributed substantially to clear the backlog and had been a real help to focus on the immunization issue.
- DOH organized equipment, vehicles and consumables in order to run the program smoothly.
- Respondents generally appreciated the effort of the government in starting the EPI Crash Program. The over all impression was that the backlog was cleared and this provided a window of opportunity to immunize the left out children on a mass scale. Supplies of syringes and vaccines were considered to be adequate, however, training and skill building of the staff was not given due emphasis. Some respondents questioned the balance between physical & financial inputs and outputs of the Crash Program. Commitment within the higher echelons of the Department led to effective monitoring and supervision and ultimately success of the initiative.

4.4 National Immunization Days (NIDs)/ Sub-National Immunization Days (SNIDs)

- All the levels were very much aware of the National Immunization Days (NIDs), the concern on the eradication of Polio was evident. Management had in-depth knowledge of the rationale and operations of the NIDs. The respondents provided detailed elaboration regarding this initiative to the TCC.
- Provincial health authorities were of the view that during all the NIDs, EPI program received full cooperation and coordination from federal and provincial governments. Divisional and district Administration at all levels contributed along with health professionals, community members, NGOs etc. to the success of the campaign. 14 NIDs have been observed so far, with the following areas for concentration during NIDs:
 1. Travel Children,
 2. Large urban populations
 3. Scattered and nomadic populations

- In all, vaccination stations in the province teams were constituted to target 10.8 million children during 1999. The manpower used was from all government departments and included volunteers. Full administrative and political support provided.
- The reported coverage of all the NIDs remained 90 % +. Concern was noted regarding number of cases with AFP. This also raised questions regarding the routine information system.
- Despite observing NIDs there have been significant gaps in some districts. In order to eradicate polio, nearly 100% coverage will have to be achieved and sustained for 3 years before the country is officially notified as Polio Free. Punjab is divided in 3 regions for two rounds with specific dates for SNIDs, during which polio drops and Vitamin A supplementation were administered. Vitamin A was given only in the second round. Door to door visits of vaccination teams consisting of DOH personnel were organized. District micro plans were prepared. Logistic and supplies were arranged before hand.
- Most of the officers were of the view that polio must be eradicated first. However all measures must be taken to combat other preventable disease.
- A general impression regarding NIDs and SNIDs, which prevailed amongst some mid-level managers is that these occasions consume significant time and resources from the routine activities thus affecting the routine coverage. However it was admitted that NIDs and SNIDs generated awareness and motivated the supervisory staff to look into the routine EPI coverage and plan accordingly. This is clearly a false impression that the routine coverage has declined because of Immunization Days.
- Senior managers were aware of the 3rd Party Evaluation going on with the assistance of UNICEF and infact were anxiously waiting for the results.
- No negative comments were received on the 3rd Party exercise, except the district health authorities showed some concern on biased reporting of other districts and expressed fear of being penalized.
- The Team felt a high degree of awareness amongst the government official, In fact this was one of the only preventive program which had credibility and was known amongst the official the most.

4.5 General Suggestions

A number of suggestions, solutions and recommendations to the issues raised were put forwarded by the officers and staff involved in the Program and is summarized as follows:

- ✓ The financial and non-financial incentives should be reviewed and necessary increments or allowances should be added. The practice of providing financial incentives during the SNIDs has proved to be encouraging.

- ✓ Special privileges should be given to female staff, such as posting near their home, child care facilities at or near the place of work, etc.
- ✓ The present health education services may be expanded and the quality may be improved. Concrete measures should be taken to encourage and promote the practices of the consumers for disease prevention and health promotion.
- ✓ Strengthen mass media communication services for priority areas and for general principles of personal hygiene and communicable disease prevention.
- ✓ Comprehensively train all relevant facility staff in individual and group face-to-face communication skills and in techniques of using the print material with the clients.
- ✓ Develop and promote use of appropriate print and audiovisual materials.
- ✓ Enhance support from community leaders/members, professional bodies, NGOs, journalists, television and radio producers, etc. Creation of greater demand for immunization of infants and tetanus toxoid vaccination for women of reproductive age.
- ✓ Actions may also be taken to involve the private sector doctors in the EPI program with the assistance of the professional bodies.
- ✓ Emphasis should be given on hands-on supervised practice to develop skills and improve performance of the health workers.
- ✓ Operationalization of Health Committees already formed within the community through LHWs in their catchment areas. The district level staff feels that these health committees could be useful in creating awareness about health problems, improving sanitation in the villages, and increasing utilization of contraceptives and immunization.

ANNEXURE

- I. Terms of Reference (TORs)
- II. Questionnaires for survey
- III. Questionnaires for system analysis