

Estimating Childhood Vaccination Coverage and Timeliness Using Pregnancy and Child Tracking System (PCTS) in Udaipur District, Rajasthan

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Background

- Immunization against common childhood diseases has been an integral component of mother and child health services in India since the adoption of the primary health care approach in 1978.
- Even with all the diligent work done by the governmental and non-governmental institutes for 100% immunization coverage, there are yet zones with very low coverage.
- Another important element is to track whether the vaccine is administered on time.
- Data on vaccines administered in Rajasthan is currently recorded on Pregnancy and Child Tracking System (PCTS).

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- Few studies reported a limitation of the non-availability of vaccination cards, findings were based on the mother's recall due to lack of data source which provides information on the timeliness of vaccination.
- Thus, the study specifically focuses on how data held on PCTS can be used to estimate the childhood vaccination coverage and timeliness.
- The views and experiences of the PCTS officials is important to learn about the usefulness, scope for improvement and challenges faced while implementing PCTS.

Research Questions

- What is the full immunization coverage achievement among eligible children in Udaipur district according to data held on PCTS?
- Are the eligible children receiving one dose of BCG, three doses of oral polio vaccine, three doses of Pentavalent and first dose of measles vaccine on time as per the schedule in Udaipur district according to data held on PCTS?
- What are the experiences of officials in implementing PCTS with reference to Immunization services?

Objectives

- To find out the full immunization coverage achievement among eligible children according to data held on PCTS.
- To assess the timeliness of one dose of BCG, three doses of oral polio vaccine, three doses of Pentavalent and first dose of measles vaccine according to data held on PCTS.
- To explore the views and experiences of officials in implementing PCTS with reference to Immunization services.

Methodology

Study Setting

- Udaipur, a predominantly tribal region is a high focus district with poor key developmental indicators like infant mortality rate (IMR) is 63 per 1000 live births (AHS 2012-13).
- As per Census 2011, out of 4.51 lakh population in Udaipur, 80.2% lives in the rural areas.
- Udaipur has 12 blocks, 2589 villages, 167 wards, 1 satellite hospital, 4 medical colleges & Hospital, 1 sub-divisional hospital, 29 CHCs, 110 PHCs, 624 sub centers, 5 city dispensaries and 3 private hospital(accredited).

Study Design

- Cross-sectional study based on secondary data analysis
- Exploratory study using a qualitative approach

Study Sample

- Two Rural Primary Health Centers (PHCs) namely Bikanani and Mandwa run by LEHS|WISH in Udaipur district.
- One Research Monitoring Evaluation & Learning (RMEL) Specialist, one Research Monitoring Evaluation & Learning Coordinator, one District Coordinator (DC), and two Data Entry Operators (DEOs) were recruited for the qualitative part of the study.

Study Participants

- Selected study participants were playing active role in PCTS implementation at different levels - State, District and PHCs.

Inclusion criteria:

- Persons holding responsibility for or directly involved in the working of PCTS at the selected PHCs were recruited as the study participants.

Exclusion criteria:

- Participants who did not consent were excluded.

Study Tools

- A template on MS Excel was designed for the quantitative research with the aim to collect PCTS held data on immunization coverage achievement and vaccination timeliness. ..\Shivani_669\Template for immunization data.xlsx
- An Interview guide was designed to explore the views and experiences of PCTS officials with reference to immunization services. Key areas of Interview guide were identified in discussion with experts. ..\Shivani_669\Interview guide.docx

Study Duration

- April 2019 (1 month)

Data Collection

- **Secondary data** was collected from the PCTS for the financial year 2017-18.
- PCTS provides aggregated coverage estimates for immunization.
- The monthly line list for timeliness on PCTS is reported using color codes.
 - ✓ **Green** for Immunization **on Time**
 - ✓ **Blue** for Immunization **after Time**
 - ✓ **Red** for Immunization **due**.
- Data extracted from the PCTS was entered into the designed template.
- For **qualitative data**, appointments were scheduled for the interview to be carried out.
- Conducted using an interview guide.
- Verbal briefings given by the researcher and consent was obtained.
- Face-to face interviews for state PCTS officials (RMEL team) and telephonic interviews for DC and the DEOs due to time constraint.
- Audio recording done, later transcribed into the Microsoft Office Word.
- Each interview lasted for 20 min on an average.

Data Analysis Plan

- **Quantitative data** was analyzed using MS Excel.
- Percentage of full immunization coverage achievement, timely immunization, after time immunization and due immunization were computed for the financial year 2017-18.
- Depicted using tables and graphs for the PHC Bikarani and PHC Mandwa.
- Transcripts for the **qualitative data** were analyzed using thematic content analysis.
- Analysis began with reading the transcripts and coding of text with progressive development of themes.

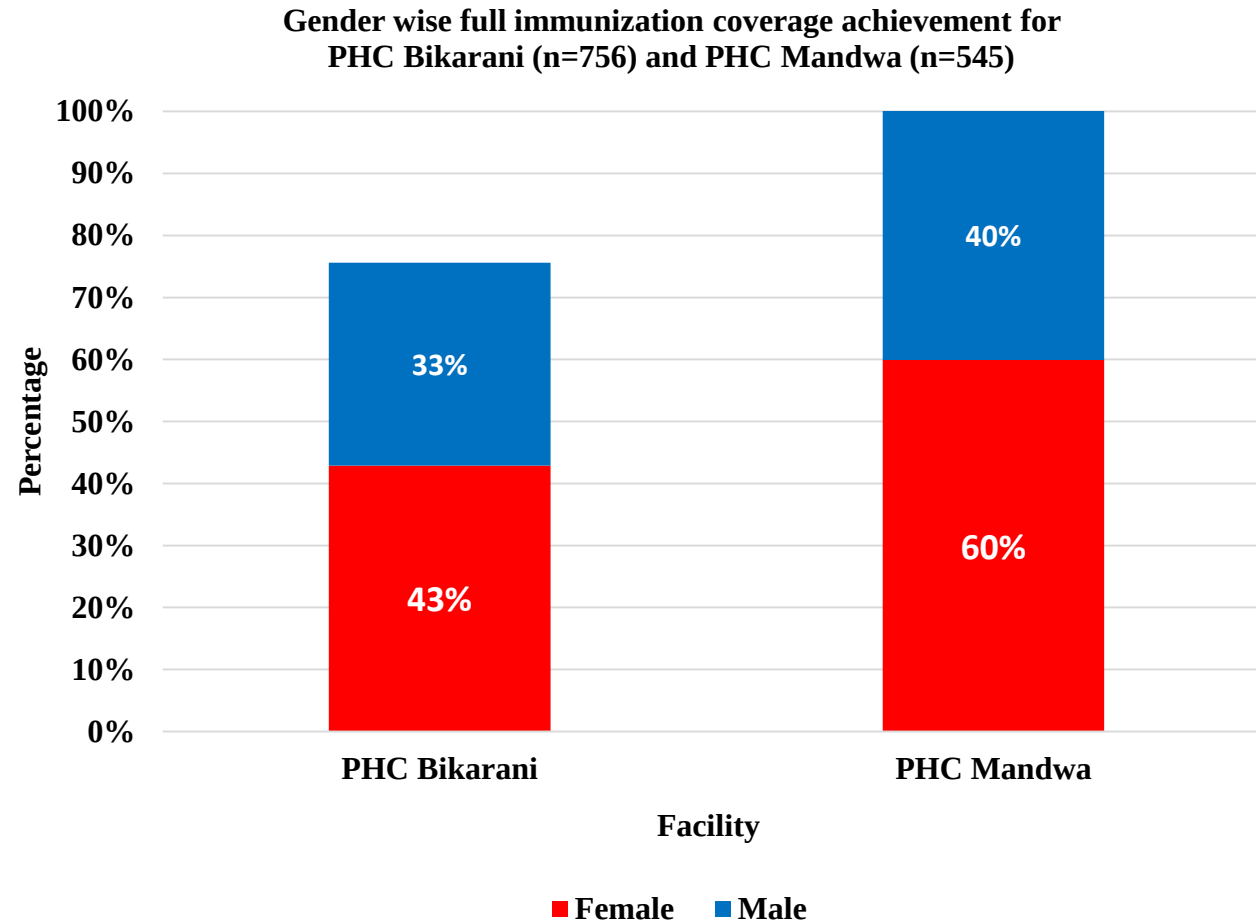
Ethical Considerations

- All the study participants were requested to participate after informing them the objectives of the study and consent was taken.
- The respondents were informed the right to refuse and withdraw anytime from study.
- All information collected during the study was kept confidential.
- Nobody other than investigators had access to the information recorded.
- All unique identifiers were removed from the transcripts.
- The study results provide valuable evidences to step forward towards capacity building, to plan local as well as policy level interventions for effective implementation of PCTS and society benefits at large.

Results

- According to PCTS, for the financial year, 2017-18 Udaipur ranked 23rd among 34 districts of Rajasthan for achievement of full immunization while it ranked 15th in 2016-17.
- The results are divided into three sections according to the objectives of the study for better understanding.

Section A: Full immunization coverage achievement



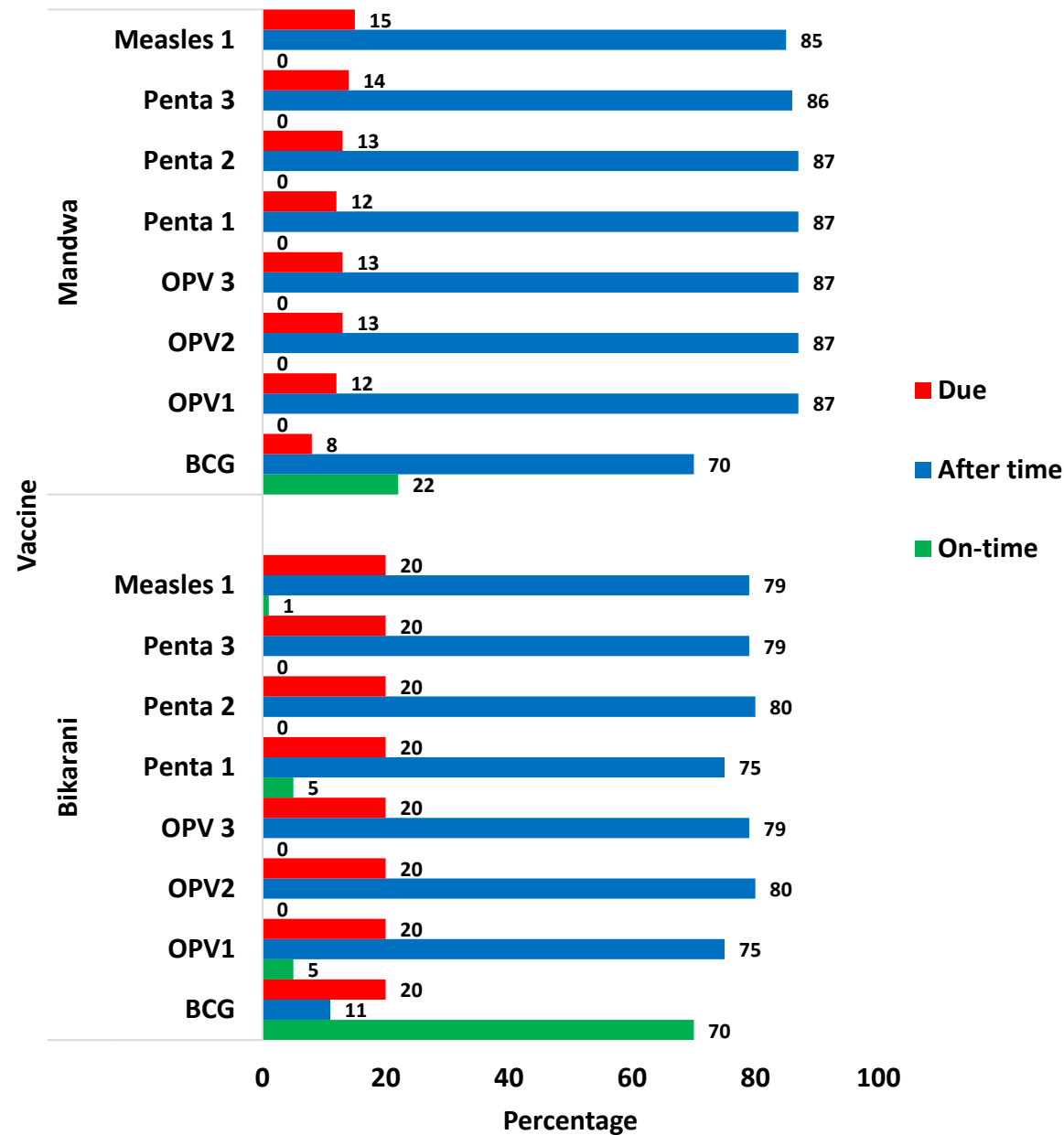
■ Annual targets of full immunization:

➤ PHC Bikarani: 1000

➤ PHC Mandwa: 544

(PCTS included information of 9 and 11 months' children who have been fully immunized)

**Timeliness of vaccination for
PHC Bikarani (n=1122) and PHC Mandwa(n=591)**



Section B: Timeliness of Vaccination

- PCTS included information on children born any time between **April 2017 to March 2018** provided in the line lists.
- In PHC Bikarani, 33 % of the deliveries were done at home and 67 % deliveries were done at public or private institutes.
- In PHC Mandwa, although 54 % were institutional deliveries, timeliness of BCG was found to be 22 %.
- No child was reported to be fully immunized as per the schedule in both the PHCs.

Section C: Views and Experiences of PCTS officials

Five interviews were carried out that included 2 state level officials, 1 district level official and 2 facility level official. The following themes were identified:

Theme 1	Findings	Verbatim
Usefulness of PCTS	▪ PCTS formats were considered useful for data collection, making work plans, tracking child immunization, missed out children and institutional deliveries. ▪ One of the interviewee mentioned how PCTS is linked to other software like OJAS and ASHA soft which helps in generating the payment automatically.	<i>PCTS is linked to Ashasoft and OJAS. The data automatically goes into that and so the payment is generated for ASHA and JSY...(R5)</i>

Theme 2	Findings	Verbatim
Exhaustive information collection	▪ PCTS is being used as an input tool for data entry, but utilization for monitoring, decision making, etc. is not being done. ▪ The information collected on immunization from the facilities every month is exhaustive but is not optimally used. ▪ Multiple forms in PCTS which give the same information.	<i>PCTS is just being used for data entry. It is not used properly. The utilization is not done up to the mark. All the data should be used.... (R1)</i>

Theme 3	Findings	Verbatim
Data accuracy and quality	▪ Large volume of data is held in PCTS, but the reliability remains an issue. ▪ One of the interviewee reported pointing on the web portal of PCTS that the immunization cumulative coverage report data and achievement report data did not match. ▪ Also, sometimes error encountered in forms already entered in PCTS involves difficulty in rectifying them.	<i>Form 6 and 7 to be entered get closed by 8th of every month, and line list is entered later, so the error captured later is difficult to rectify and involves calling the district officials to correct the number. (R4)</i>

Theme 4	Findings	Verbatim
Content related issues	▪ Lack of listing penta vaccine in few forms in PCTS leads to a loss of track on immunization coverage of Penta. ▪ Migrated children remained on the system. This inflates the denominator and therefore under-estimation of vaccine coverage and timeliness as per the line list is reported in PCTS. ▪ Full Immunization coverage achievement in PCTS given in the appraisal report includes unregistered children leading to an overestimation of true coverage.	<i>If you see the immunization coverage found in the achievement report, there you will see that the achievement is actually overachievement because the unregistered children are also added...(R1)</i>

Theme 5	Findings	Verbatim
Operational issues	■ Poor logistics support in terms of power supply and internet connectivity.. ■ During the starting of the new financial year, the web portal is updated for the targets which involve an interruption in data entry for a few days. ■ During the working hours, several users log in simultaneously, which slows down the server.	<i>PCTS is a little slow. When we don't use it for 2-3 min, it gets logged out, so we have to log in again and again. If there is no internet connectivity, it will not work. Also, the data we need cannot be extracted all in one go. We have to go to different fields.</i> <i>(R2)</i>

Theme	Findings	Verbatim
Failure of timely and full immunization	▪ Migration of people to Gujarat was the major challenge faced for implementation of immunization services. ▪ Security issues lead to absenteeism from work, vacant positions or ANMs changing every 5-6 months. ▪ On the demand side, there is lack of understanding for benefits of immunization, lack of information about the schedule and importance of subsequent doses, lack of awareness on normal after-effects of vaccination.	<i>People go to Gujarat for work, and when they come back, they come for vaccination, that is why vaccine is not given on time...(R4)</i>

Theme	Findings	Verbatim
Educational advancement and training	▪ Training for the ANM and LHV regarding the PCTS and immunization. ▪ Group discussion with experts can be beneficial. ▪ The training programs must emphasize value of data quality integrated with supportive supervision. ▪ Refresher trainings with agenda of implementation weaknesses should be built into the training plan.	▪ <i>There should be training given for PCTS. The field staff does not get regular training. LHV has less idea. They should be trained from time to time and should be updated on the changes. (R 2)</i>

Limitations

- The study is not a true representative as the sample size is very small.
- Does not cover all the primary health centers.
- The study does not include officials of Government run PHCs and Government recruited officials.

Conclusion

- Although enormous improvement is seen in the overall immunization coverage achievement but timeliness still shows a gross underperformance in Udaipur district.
- This can be attributed to the migration and lack of understanding among tribal population about the importance of timeliness of vaccination.
- The study was able to capture the experiences of PCTS officials which revealed that they are aware of the significance of PCTS.
- They raised several challenges such as: lack of proper connectivity, slow speed of server, frequent power failures, inadequate trainings, data quality and data usage.

Suggestions

- Immunization coverage and timeliness evaluation should be a regular feature of the system through independent agencies.
- There should be an addition of column highlighting reasons for children not being fully immunized.
- Educating health workers regarding the importance of timeliness of vaccination.
- A track on vaccine doses received earlier than the recommended age should also be included.
- For resource – poor areas with poor power supply and internet connectivity, offline data entry capabilities should be processed into the PCTS software.

References

1. Kadri AM, Singh A, Jain S, Mahajan RG, Trivedi A. STUDY ON IMMUNIZATION COVERAGE IN URBAN SLUMS OF AHMEDABAD CITY [Internet]. Vol. 33, HPPI. [cited 2019 Apr 20]. Available from: <http://medind.nic.in/hab/t10/i1/habt10i1p50.pdf>
2. Vashishtha VM, Kumar P. 50 years of Immunization in India: Progress and Future [Internet]. Vol. 111, INDIAN PEDIATRICS. 2013 [cited 2019 Apr 20]. Available from: <http://medind.nic.in/ibv/t13/i1/ibvt13i1p111.pdf>
3. Health C. Twelfth Five Year Plan [Internet]. National Health Mission. 2000 [cited 2019 May 12]. Available from: <https://mohfw.gov.in/sites/default/files/04Chapter.pdf>
4. Feldstein LR, Mariat S, Gacic-Dobo M, Diallo MS, Conklin LM, Wallace AS. Global Routine Vaccination Coverage, 2016. MMWR Morb Mortal Wkly Rep [Internet]. 2017 Nov 17 [cited 2019 Apr 20];66(45):1252–5. Available from: <http://www.cdc.gov/mmwr/volumes/66/wr/mm6645a3.htm>
5. Fadnes LT, Jackson D, Engebretsen IM, Zembe W, Sanders D, Sommerfelt H, et al. Vaccination coverage and timeliness in three South African areas: a prospective study. BMC Public Health [Internet]. 2011 Dec 27 [cited 2019 Apr 1];11(1):404. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21619642>

Contd..

6. Ramaswamy G, Pruthi TK, Selvaraj K, Vinayagamurthy VM, Chinnakali P. Timeliness of primary childhood vaccination in a rural area of Puducherry, South India: evidence from routine management information system. *Int J Contemp Pediatr* [Internet]. 2017 Feb 7 [cited 2019 Apr 1];1(3):131–4. Available from: <https://ijpediatrics.com/index.php/ijcp/article/view/597>
7. Cherian V, Kumar Saini N, Kumar Sharma A. Assessment of timely immunization in an urbanized agglomeration of East Delhi, India. *Int J Community Med Public Heal* [Internet]. 2019 Feb 22 [cited 2019 Apr 1];6(3):1156. Available from: <https://www.ijcmph.com/index.php/ijcmph/article/view/4200>
8. Sood RK, Sood A, Bharti OK, Ramachandran V, Phull A, Sood RK, et al. High Immunization Coverage but Delayed Immunization Reflects Gaps in Health Management Information System (HMIS) in District Kangra, Himachal Pradesh, India—An Immunization Evaluation. *World J Vaccines* [Internet]. 2015 Apr 16 [cited 2019 Apr 1];05(02):69–78. Available from: <http://www.scirp.org/journal/doi.aspx?DOI=10.4236/wjv.2015.52009>
9. Shrivastwa N, Gillespie BW, Lepkowski JM, Boulton ML. Vaccination Timeliness in Children Under India's Universal Immunization Program. *Pediatr Infect Dis J* [Internet]. 2016 Sep [cited 2019 Apr 1];35(9):955–60. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27195601>
10. Shrivastwa N. Understanding Disparities in Vaccination Coverage among Indian Children [Internet]. [cited 2019 Apr 6]. Available from: https://deepblue.lib.umich.edu/bitstream/handle/2027.42/111362/nijikas_1.pdf?sequence=1&isAllowed=y

Contd...

11. Tracking PC. Pregnancy Child Tracking and Health Services Management System Rajasthan.
12. Gera R, Muthusamy N, Bahulekar A, Sharma A, Singh P, Sekhar A, et al. An in-depth assessment of India's Mother and Child Tracking System (MCTS) in Rajasthan and Uttar Pradesh. BMC Health Serv Res [Internet]. 2015 Dec 11 [cited 2019 Apr 1];15(1):315. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26259836>
13. Shepra D. A study on developing an mHealth solution as an alternate recording and reporting system for Auxiliary nurse midwives in Udaipur district of Rajasthan. The IIHMR University, Jaipur; 2016.
14. Pahwa HS, Goyal D, Sareen D. Evaluation of immunization coverage and its determinants in children aged 12-24 months from rural and urban areas of Udaipur, Rajasthan, India. Int J Contemp Pediatr [Internet]. 2019 Feb 23 [cited 2019 Apr 20];6(2):837. Available from: <https://www.ijpediatrics.com/index.php/ijcp/article/view/2273>
15. Nagarajan P, Tripathy J, Goel S. Is mother and child tracking system (MCTS) on the right track? An experience from a northern state of India. Indian J Public Health. 2016;60(1):34.

THANK YOU

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