

Impact of Vaccination Coverage on AEFI Rates: A study in Panchkula

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INTRODUCTION

- Vaccination coverage refers to the percentage of a population that has received specific vaccines. Monitoring vaccination coverage helps assess how well communities are protected from vaccine-preventable diseases (VPDs) and identify areas with lower coverage to target interventions.
- Any untoward medical occurrence which follows immunization, and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, abnormal laboratory finding, symptom or disease
- Relationship between Vaccination coverage and AEFI: Increased coverage and increased AEFI, Improved reporting and monitoring, and vaccine confidence.
- Vaccination is a critical public health intervention, but adverse events following immunization (AEFIs) can impact vaccine acceptance and coverage. This study examines the relationship between vaccination coverage and AEFI rates in the Panchkula district of Haryana, India, to inform strategies for improving immunization programs and reducing disparities.
- AEFIs can be common and minor (like fever, local pain and swelling), severe (like pain and swelling which spreads beyond the nearest joint, anaphylaxis or high grade fever) and serious AEFIs (conditions requiring hospitalization or leading to death or disability).

REVIEW OF LITERATURE

S.No	Author	Title	Study design	Results/Conclusion
1.	Nishu C. Gupta ¹ , Kamlesh Kumar G. Rathod, Lalita R. Garg	Assessment of knowledge of multipurpose health workers regarding adverse events following dc immunization in a rural block of Haryana, India.	A cross-sectional study was undertaken on randomly selected 30 MPHWs of Beri block. A semi-structured questionnaire was administered after taking verbal consent.	About 83% of the MPHWs knew that fever, pain, redness and swelling at injection site were .symptoms of AEFI and 93% knew about proper storage temperature, dose, route and site of vaccines. Only 33% knew about filling an adverse event form to report an AEFI. There was a lack of knowledge about the cause, identification and reporting of AEFI.
2.	Smita Verma, Nirmal Verma, Neha Shrivastav, Swapnil V. Shinkar, Ashish Sahu, Bhupendra Kumar Sahu, Ankit Dewangan, Ankita Saha, Nitish Sahu	Assessment of knowledge about adverse effects following immunization among health care workers of Raipur city.	A cross-sectional study was conducted among 157 health care workers of primary health care centers of Raipur City. A predesigned pretested the questionnaire was administered after taking verbal consent. Data was collected, compiled and analyzed in MS excel.	More than 80% participants knew vaccine product and vaccine quality ok defect-related .reaction as possible causes of AEFI. 7.3%knew about swelling as the commonest AEFI. 59.9% had nnxc knowledge about management of common AEFI. 99.3% Health care workers knew anaphylaxis as one of severe AEFI and 91.08% were aware that AEFI should be reported.
3.	Juny Sebastian, Parthasarathi Gurumurthy, Mandyam Dhati Ravi, and Madhan Ramesh	Active surveillance of adverse events following immunization (AEFI): a prospective 3-year vaccine safety study	The prospective active vaccine safety surveillance study enrolled eligible children in the age group 0–5 years receiving vaccination from the immunization center at JSS Hospital, Mysuru. Study participants were monitored at the site for 30 min following vaccination and a telephonic survey was made after 8 days to identify all AEFIs.	The incidence of reported AEFIs was 13.7%. The most frequently reported AEFI was fever (n = 3095, 93.2%) with an incidence of 109.7 per 1000 doses of vaccine; administered, followed by persistent crying (n = 69, 2.4 per 1000 doses of vaccine) and diarrhea (n = 57, 2.0 per 1000 doses of vaccine). The majorly implicated vaccine for AEFIs was Pentavac followed by BCG. Consistent causal association to immunization was observed in 93.4% of cases. A high incidence rate of AEFI was observed in our study population when compared with previous published studies.
4.	Eunice Baiden Laryea John Tengey , Joseph Asamoah Frimpong , Delia Bando , George Sabblah ,Charles LwangaNoora ¹ , DonneAmeme Kwame Amponsa-Achiano	Evaluation of the adverse events following immunization surveillance system, Ghana, 2019	We reviewed surveillance data and procedures for the period 2014 to 2018 and interviewed key stakeholders. Adapting the CDC’s Updated Guidelines for Evaluating Public Health Surveillance Systems, we assessed the system’s attributes and usefulness. We performed summary descriptive statistics on quantitative data and directed content analysis on information gathered from interviews.	In all, 2,282 AEFI cases including 476 (21%) serious cases (life threatening events) were reported for the period. The highest case detection rates of 61.45 AEFIs per 100,000 surviving infants was recorded in 2018. The AEFI surveillance system is useful at all levels but partially meeting its objective due to underreporting. We recommend training and supportive supervision to improve timeliness of reporting, data completeness and acceptability.



RESEARCH QUESTION:

1. What is the correlation between vaccination coverage and AEFI rates in rural and urban areas of Panchkula?
2. Are there significant differences in AEFI rates between rural and urban facilities of Panchkula?

OBJECTIVES:

1. To identify the vaccination coverage rate and AEFI rates
2. To identify disparities between rural and urban facilities in terms of vaccination coverage and AEFI

METHODOLOGY

Study Design: The present study is retrospective, cross sectional in nature

Study Setting: The study was conducted in Panchkula, a district in Haryana

Selection Criteria:

- Inclusion period- reported under HMIS and Physical data.
- Exclusion period- left out population that is out of the survey, under reported data on indicators, migrated population

Data Collection Procedures: Secondary data was collected through government portal like HMIS .

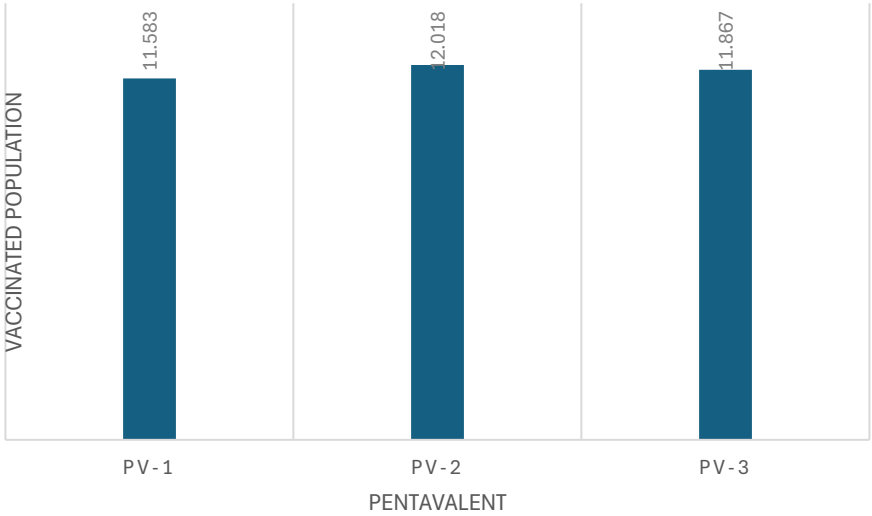
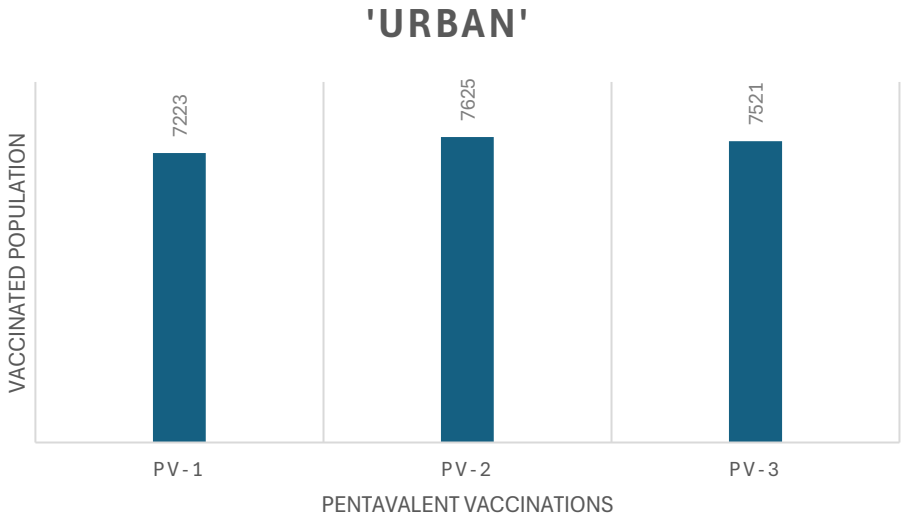
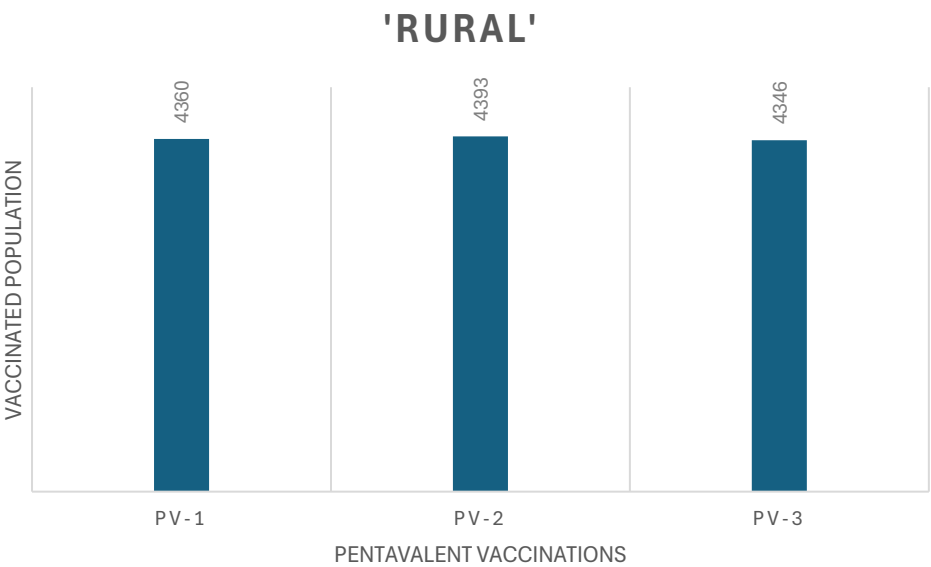
A retrospective Cross-sectional study was conducted for a duration for one year from March 2023 to April 2024



KEY FINDINGS

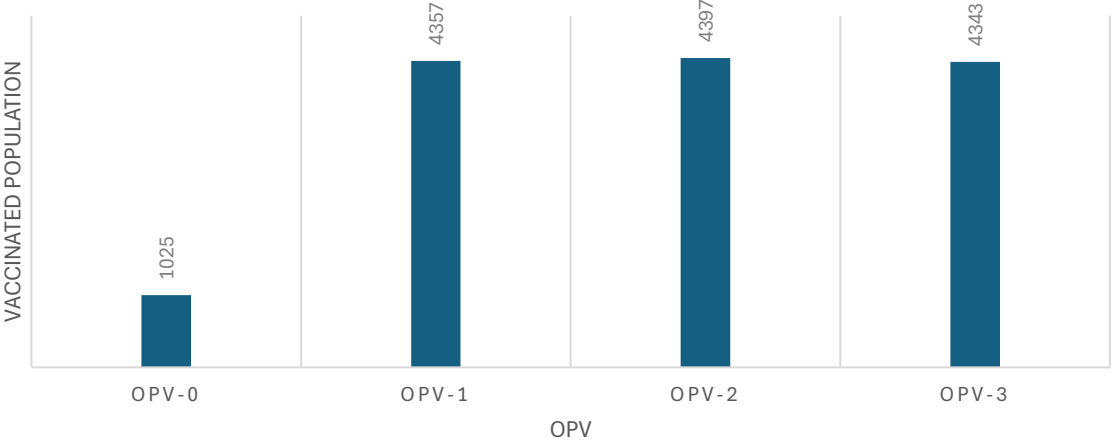
- 1. High Vaccination Coverage:** The study found a total of 12,128 live births across urban and rural settings in the Panchkula district during the one-year period. Of these, 11,122 (91.7%) live births occurred in urban health institutions, while 1,006 (8.3%) were in rural health institutions.
- 2. Gender Distribution:** Of the total live births, 5,387 (48.4%) were females and 5,735 (51.6%) were males in the urban settings. In the rural settings, 529 (52.6%) were females and 477 (47.4%) were males.
- 3. Vaccines Studied:** The study considered the following vaccines: Pentavalent, OPV, Rotavirus, BCG and Vitamin K.
- 4. AEFI Reporting:** The study did not find any significant increase in the reporting of severe or serious adverse events following immunization (AEFI) despite the high vaccination coverage. The AEFI reporting rates remained stable and within the expected range.
- 5. Surveillance and Monitoring:** The study highlights the importance of robust vaccine safety surveillance and monitoring systems in place, which allowed for the timely detection and reporting of any AEFI, without compromising public confidence in the immunization program.
- 6. Transparency and Communication:** The study underscores the need for transparent and effective communication regarding vaccine safety to maintain public trust, even as vaccination coverage increases and more AEFIs are reported.

PENTAVALENT VACCINATIONS

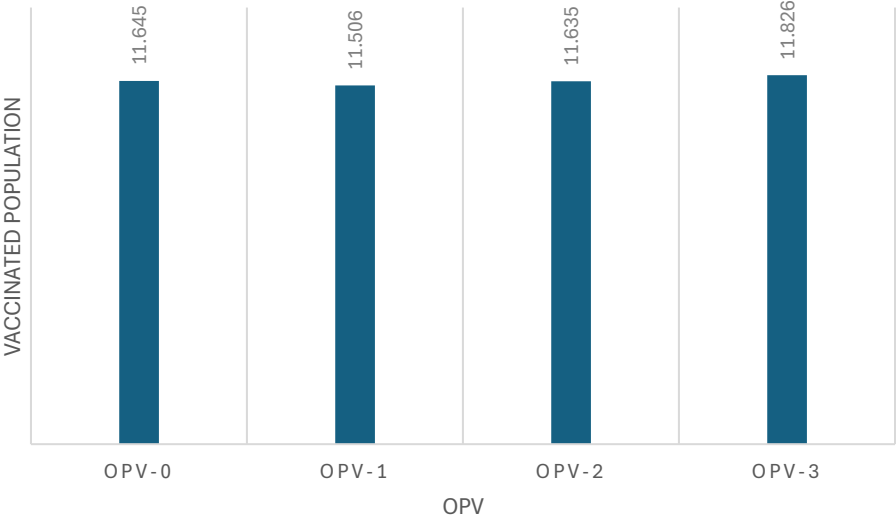
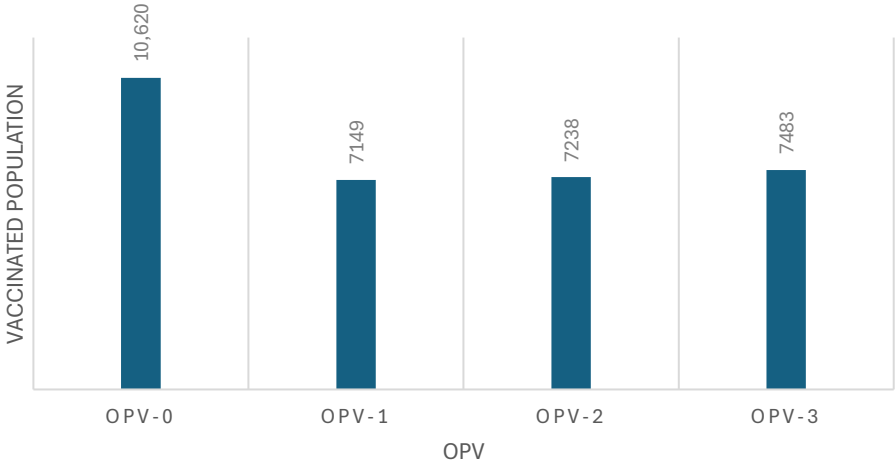


OPV VACCINE

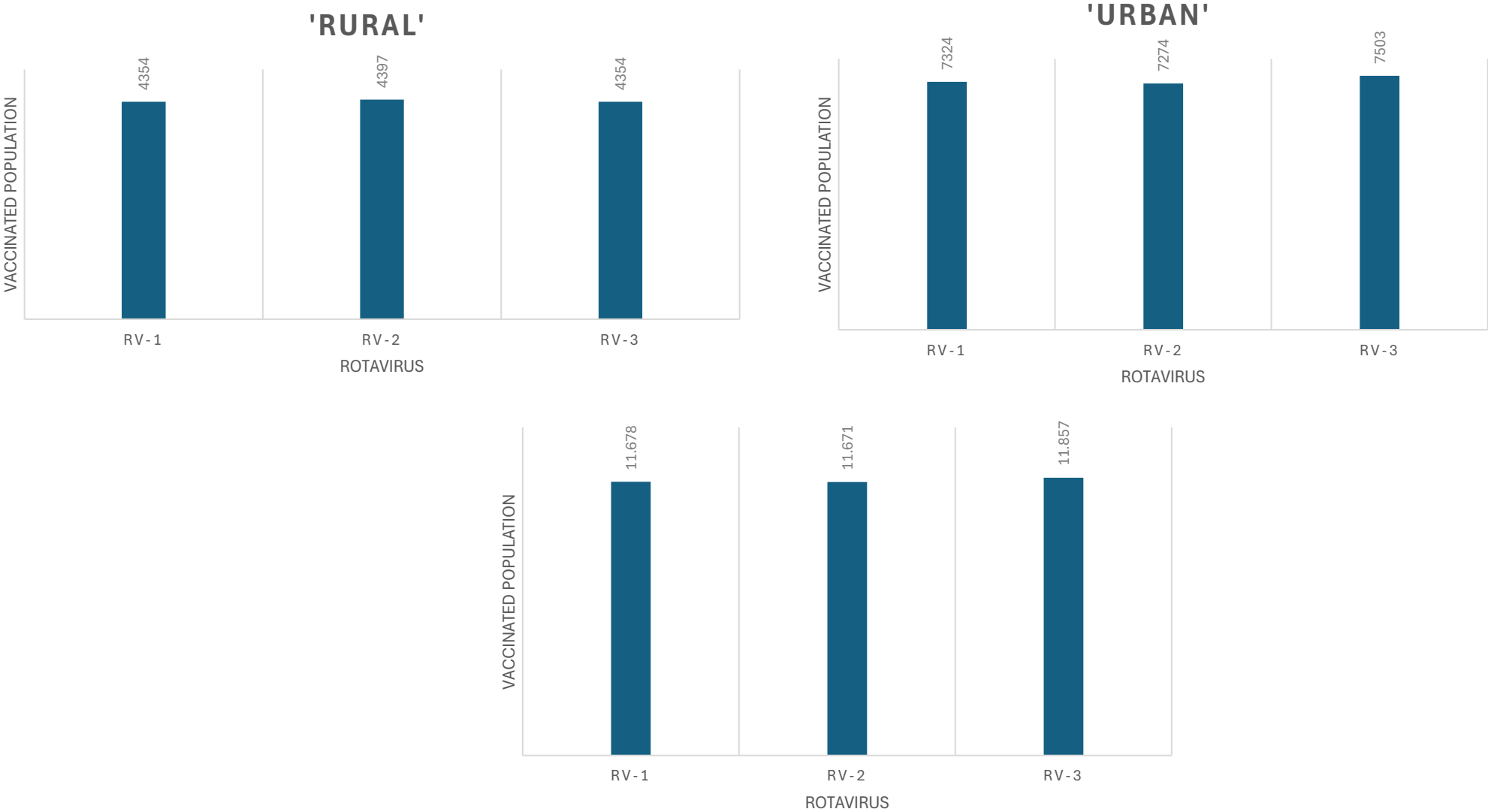
'RURAL'

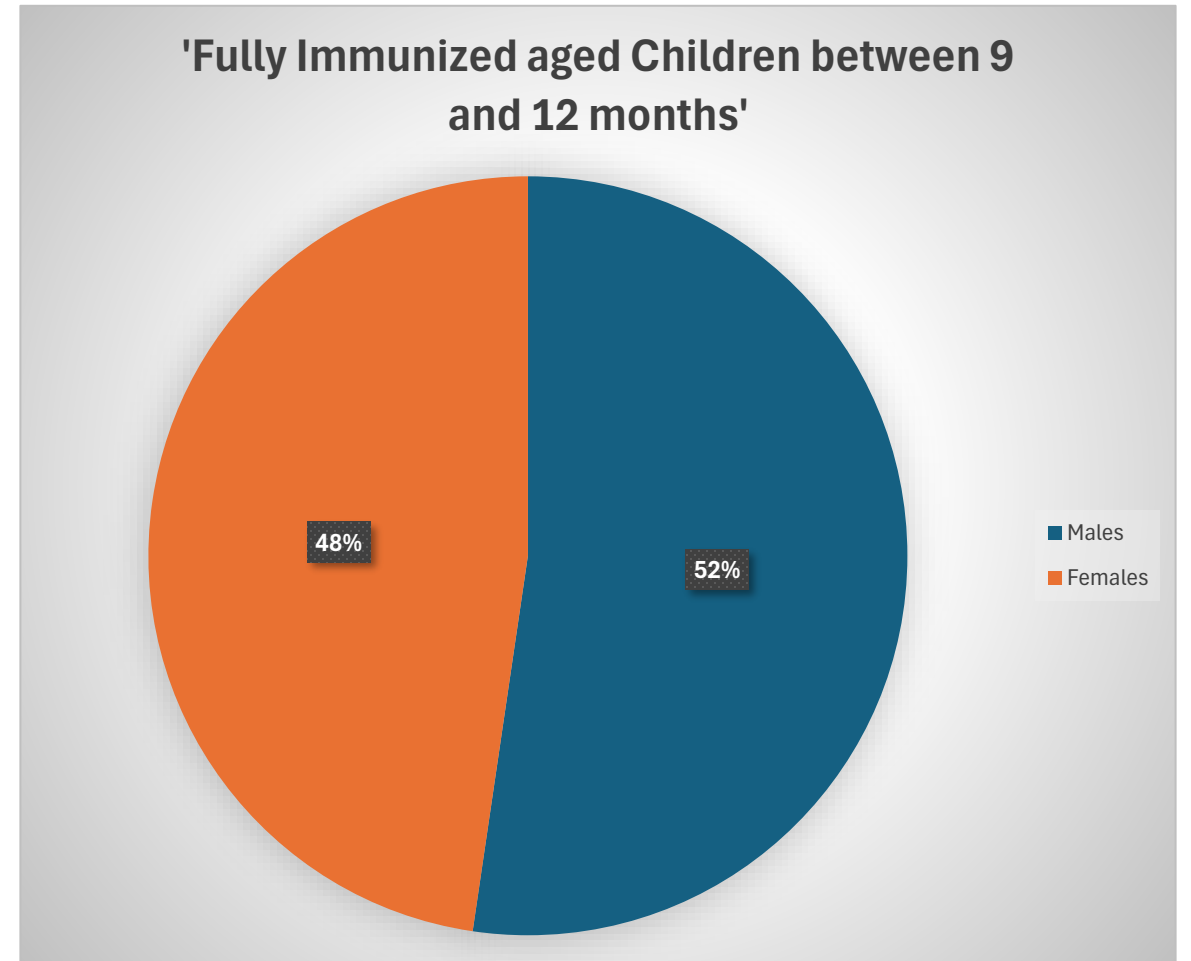
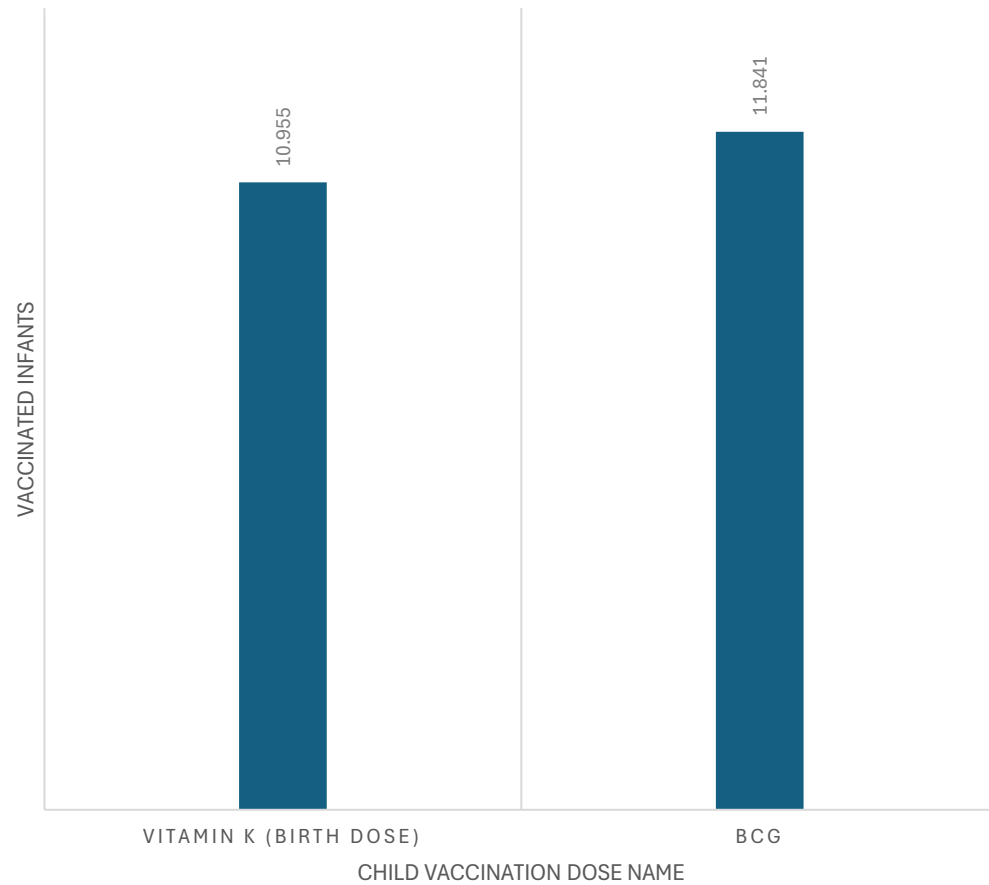


'URBAN'



ROTAVIRUS VACCINE





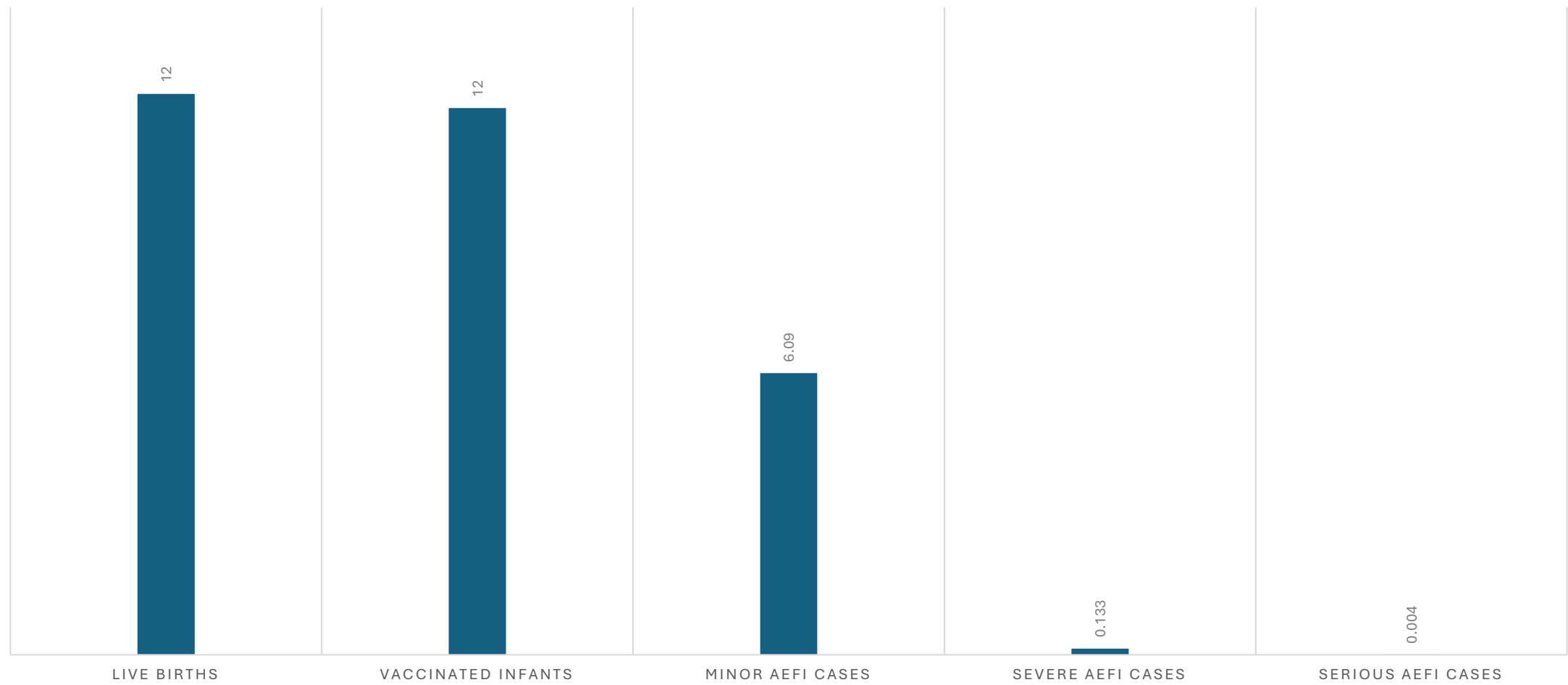
AEFI CASES

AEFI	VACCINATED POPULATION WHO GOT AEFI IN RURAL FACILITIES
MINOR	2042
SEVERE	18
SERIOUS	1
TOTAL	2061

AEFI	VACCINATED POPULATION WHO GOT AEFI IN URBAN FACILITIES
MINOR	4048
SEVERE	115
SERIOUS	3
TOTAL	4166

AEFI CASES	VACCINATED POPULATION IN PANCHKULA WHO GOT AEFI
MINOR	6090
SEVERE	133
SERIOUS	4
TOTAL	6227

ASSOCIATION BETWEEN LIVE BIRTHS, VACCINATION COVERAGE AND AEFI



DISCUSSION

1. **High Vaccination Coverage:** The study found a high overall vaccination coverage in the Panchkula district, with 91.7% of live births occurring in urban health facilities and 8.3% in rural settings, indicating the successful implementation of the immunization program across both urban and rural areas. The vaccination coverage was found to be 104%.
2. **Comprehensive Vaccine Assessment:** The study considered a wide range of vaccines, including Pentavalent, OPV, Rotavirus, BCG, and Vitamin K, providing a comprehensive assessment of the routine immunization program in the Panchkula district.
3. **Stable AEFI Reporting:** Despite the high vaccination coverage, the study did not find any significant increase in the reporting of adverse events following immunization (AEFI). The AEFI reporting rates remained stable and within the expected range for the vaccines studied, suggesting that the immunization program was not associated with a disproportionate increase in adverse events.
4. **Effective Surveillance and Monitoring:** The study highlights the importance of robust vaccine safety surveillance and monitoring systems in place, which allowed for the timely detection and reporting of any AEFI, without compromising public confidence in the immunization program. This emphasizes the need for effective monitoring and surveillance mechanisms to ensure the safety and effectiveness of the immunization program.
5. **Transparent Communication:** The study underscores the need for transparent and effective communication regarding vaccine safety to maintain public trust, even as vaccination coverage increases and more AEFIs are reported. This points to the importance of open and transparent communication with the public to address any concerns and maintain confidence in the immunization program.



CONCLUSION

- **Comprehensive Vaccination:** Panchkula district achieved high vaccination coverage, with comprehensive immunization of infants against vaccine-preventable diseases.
- **Robust AEFI Reporting:** The district demonstrated a strong AEFI surveillance system, with the reporting rate for all types of adverse events. . The AEFI rate of minor AEFI cases were found to be 51.5%. AEFI rate of severe AEFI cases were 1.12%. AEFI rate of serious AEFI cases were 0.03%.
- **Continuous Improvement:** Ongoing efforts to enhance AEFI reporting, address disparities, and strengthen vaccine safety monitoring will be crucial for the success of the immunization program.
- **Stable AEFI Reporting:** Despite the high vaccination coverage, the study did not find any significant increase in the reporting of adverse events following immunization (AEFI). This suggests that the immunization program was not associated with a disproportionate increase in adverse events, and the AEFI reporting rates remained within the expected range.

RECOMMENDATIONS

- **Enhance Training:** Provide comprehensive training to healthcare workers on AEFI reporting guidelines and the importance of thorough documentation.
- **Strengthen Surveillance:** Shift from passive to active surveillance methods to capture a more comprehensive picture of adverse events following immunization.
- **Address Barriers:** Identify and address barriers to AEFI reporting, such as fear of consequences and lack of awareness, to improve overall reporting rates.
- **Proper Vaccine Handling:** Ensure proper storage, handling, and administration of vaccines to minimize the risk of adverse events.
- **Symptom Management:** Provide appropriate treatment for minor AEFIs, such as fever and pain, to alleviate symptoms and prevent escalation.
- **Vigilant Monitoring:** Closely monitor infants for any adverse reactions following vaccination and report all events, regardless of severity.

THANK YOU !!