

“Impact of Vaccination Coverage on AEFI Rates: A study in Rural and Urban Areas of Panchkula”

A Dissertation Synopsis

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Title:

Impact of Vaccination Coverage on Adverse Events Following Immunization (AEFI) Rates in Rural and Urban Areas of Panchkula, Haryana.

Introduction:

Vaccination is a crucial public health measure to prevent infectious diseases. According to WHO, Adverse Events Following Immunization (AEFI) are a significant concern in vaccination programs, as they can lead to decreased vaccination coverage and trust in the healthcare system. AEFI is defined as 'any untoward medical occurrence which follows immunization, and which does not necessarily have a causal relationship with the use of the vaccine. The adverse event may be any unfavorable or unintended sign, an abnormal laboratory finding, a symptom, or a disease.

AEFIs can be divided into five broad categories:

1. Vaccine product-related: where a component of the vaccine is responsible for an adverse reaction.
2. Vaccine quality-related: where the event is associated with a manufacturing process: for example, if a batch of vaccines becomes contaminated or a manufacturer loads it into faulty syringes.
3. Immunization error-related: where the reaction is due to inappropriate handling, prescription, or administration of the vaccine: for example, if it is injected into the wrong body part or the vaccine accidentally gets frozen during transportation.
4. Immunization stress-related: where the adverse event is because of the fear of being injected. This can result in physical responses: such as fainting, dizziness, tingling in the hands or around the mouth, vomiting, or even convulsions.
5. Coincidental: where an adverse event has no direct relationship with the vaccine or any of the above, but it occurs soon after vaccination and hence may be attributed to it, nonetheless.

Studies in India have highlighted the disparities in vaccination coverage between rural and urban areas. For instance, a study in Haryana found that the full immunization coverage ranged from 95% in the best-performing district (Kurukshetra) to as low as 38% in the poorest-performing district (Mewat). Meanwhile the AEFI rates also increased in areas with high vaccination coverage.

Despite the importance of vaccination in public health, there is a lack of understanding of the factors influencing vaccination coverage and AEFI rates in rural and urban areas of Panchkula, Haryana. The disparities in vaccination coverage and AEFI rates between these areas can have significant implications for the effectiveness of immunization programs and the overall health of the population. Therefore, this study aims to investigate the factors influencing vaccination coverage and AEFI rates in rural and urban areas of Panchkula, Haryana, to inform strategies for improving vaccination programs and reducing AEFI rates in these areas.

Research Questions:

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 areas of Panchkula?

Objective:

1. The primary objective of this study is to examine the impact of vaccination coverage on AEFI rates in rural and urban areas of Panchkula, and to identify strategies to improve vaccination coverage and reduce AEFI rates.
2. To identify the disparities in vaccination coverage and AEFI rates between rural and urban areas and their potential causes.

Hypothesis:

Null Hypothesis (H0): There is no significant difference in vaccination coverage and AEFI rates between rural and urban areas of Panchkula.

Alternative Hypothesis (H1): There is a significant difference in vaccination coverage and AEFI rates between rural and urban areas of Panchkula

Materials and Methods:

Study Design:

This study will employ a comparative study design to analyze the correlation between vaccination coverage and AEFI rates in rural and urban areas of Panchkula.

Setting:

The study will be conducted in rural and urban areas in Panchkula, a district of Haryana, India.

Study Population:

A population-based cross-sectional study was conducted among the 12,128 (live births) infants in rural and urban area population in Panchkula for financial year April 2023- March 2024. One district was selected purposively for the survey (Panchkula, Haryana) based on logistic and administrative feasibility and its urban and rural population. Panchkula is a predominantly urban district with 40% rural area in the state of Haryana having a population of nearly 6 lakhs. There are four sub-districts in Panchkula district: Barwala, Kalka, Morni, Panchkula and Raipur rani.

Data Collection Procedure:

Secondary Data will be collected from government health records and databases, as well as from healthcare facilities and immunization clinics in rural and urban areas of Haryana. Phone calls will be done to parents to know about dropout rates in vaccinated programs.

Data Analysis:

Mean, median, and standard deviation of vaccination coverage rates and AEFI rates in rural and urban areas of Panchkula will be calculated. The relationships between the dependent (vaccination coverage and AEFI rates) and the independent variables (potential factors influencing these rates) will be visualized using bar charts, or other appropriate visualizations.

Ethical Considerations:

Informed consent will be obtained from the parents, and confidentiality will be maintained throughout the study.

Implications of Research:

The findings of this study will inform policymakers and healthcare providers on strategies to improve vaccination coverage and reduce AEFI rates in Panchkula, ultimately contributing to the overall improvement of immunization programs in the region.

References:

- *World Health Organization. (2022). Adverse Events Following Immunization (AEFI).*
- *Haryana Government. (2022). Vaccination Coverage Data.*
- *Haryana Government. (2022). AEFI Case Data.*

[Active surveillance of adverse events following immunization \(AEFI\): a prospective 3-year vaccine safety study - PMC \(nih.gov\)](#)