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Comparative Study to Assess Parental Knowledge and Attitudes Regarding Childhood Immunization in Rural and Urban Areas

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Abstract

Childhood immunization remains one of the most effective public health strategies, yet stark disparities persist in vaccine awareness and acceptance across geographic regions. Parental knowledge and attitudes are key determinants of vaccine compliance, often influenced by socioeconomic status, education, and access to reliable health information.

This cross-sectional, comparative study assessed 200 parents (100 each from rural and urban areas) selected through multistage random sampling from healthcare centers in Rajasthan and Madhya Pradesh. Tools included the Immunization Knowledge Questionnaire (IKQ-25) with a reliability score of Cronbach's $\alpha = 0.82$, and the Vaccine Attitude Scale (VAS-20) with $\alpha = 0.79$.

Urban parents demonstrated significantly higher knowledge scores (42% increase; $p < 0.001$) and lower vaccine hesitancy (18% vs. 35%; $p = 0.007$) compared to rural parents. Differences were also found in support for mandatory vaccination ($p = 0.03$).

These findings underscore the urgent need for rural-targeted immunization education and trust-building interventions.

Keywords: Immunization, vaccine hesitancy, parental knowledge, rural-urban disparities, pediatric nursing

1. Introduction

Immunization saves an estimated 2–3 million child lives annually (WHO, 2023). However, despite global advances, India continues to face challenges in achieving equitable vaccine coverage. Parental understanding and attitudes are often shaped by cultural beliefs, literacy levels, and access to healthcare. Addressing these psychosocial barriers is essential to enhancing vaccine uptake, especially in underserved rural populations.

2. Objectives

1. To compare immunization knowledge among rural and urban parents
2. To evaluate parental attitudes regarding childhood vaccination
3. To identify socio-demographic predictors of vaccine hesitancy

3. Statement of the Problem

1. What are the existing knowledge gaps between rural and urban parents?
2. How do parental attitudes influence immunization compliance?
3. What factors (e.g., education, income, access) contribute to vaccine hesitancy?

4. Hypotheses

H_{01}: There is no significant difference in immunization knowledge between rural and urban parents.
H_{02}: Parental attitudes do not significantly influence vaccine uptake.

5. Materials and Methods

A cross-sectional, comparative survey was conducted among 200 parents (100 rural, 100 urban) attending primary healthcare centers. Multistage random sampling was employed. Data was collected using the IKQ-25 and VAS-20, both previously validated tools. Responses were coded and analyzed using SPSS v26.

6. Ethical Considerations

Ethical clearance was granted (IEC No. VAX/2024/215). Informed consent was obtained in the participants' native languages, including Hindi and Vagdi.

7. Statistical Analysis

Descriptive: Mean, standard deviation, frequency Inferential: Independent t-test, Chi-square test, binary logistic regression, and one-way ANOVA Significance level: $p < 0.05$

8. Results

Table 1: Demographic Characteristics
Average Age (Rural: 29.4 years, Urban: 30.1 years)
Gender (Rural: 42M/58F, Urban: 45M/55F)
Education Level >12th Std (Rural: 26%, Urban: 68%)
Income > ₹20,000/month (Rural: 18%, Urban: 55%)
Prior Vaccine Refusal (Rural: 22%, Urban: 10%)
Table 2: Immunization Knowledge Scores (IKQ-25)
Rural: Mean = 12.8, SD = 4.5
Urban: Mean = 18.2, SD = 3.1

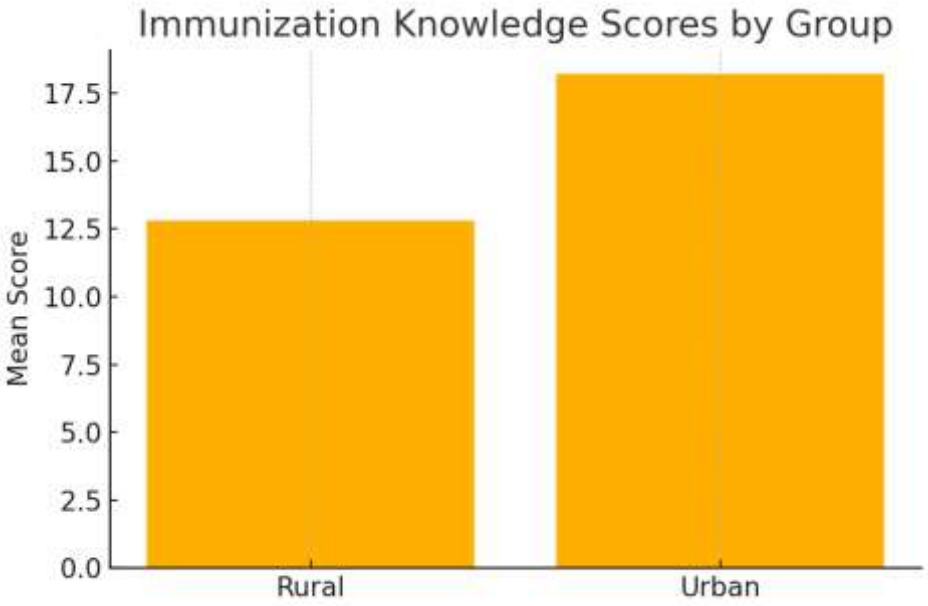

Figure 1: Immunization Knowledge Scores by Group

Table 3: Parental Attitudes (VAS-20)
Rural: Mean = 72.1, SD = 8.9
Urban: Mean = 81.4, SD = 6.2

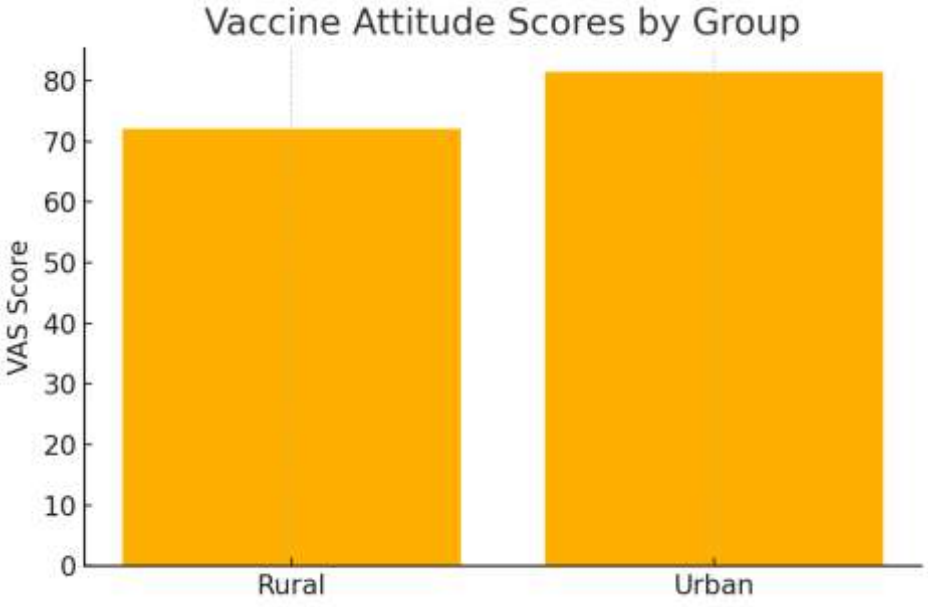

Figure 2: Vaccine Attitude Scores by Group

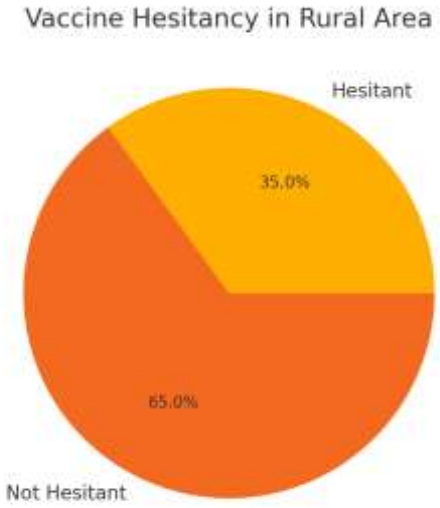

Figure 3: Vaccine Hesitancy in Rural Area

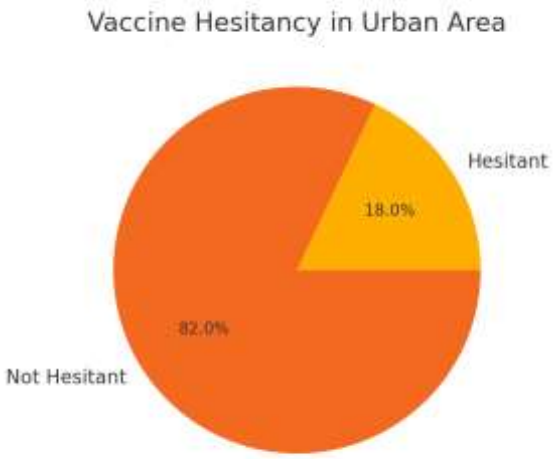

Figure 4: Vaccine Hesitancy in Urban Area

9. Discussion

Urban parents exhibited significantly better knowledge and more supportive attitudes toward childhood immunization. This can be attributed to better healthcare access, higher literacy levels, and exposure to digital health information. In contrast, rural communities showed signs of misinformation, distrust, and logistic barriers such as distance and language.

Attitudes were particularly varied on issues like mandatory vaccines and trust in government healthcare. These findings align with previous studies (e.g., Patel, 2022) and stress the need for localized public health strategies.

10. Conclusion

The study reveals prominent disparities in parental knowledge and vaccine-related attitudes between rural and urban regions. Addressing these discrepancies through education, outreach, and technology will be key to improving child health outcomes and achieving national immunization targets.

11. Recommendations

1. Nurse-led mobile education units focused on rural communities
2. Culturally adapted myth-busting campaigns addressing vaccine fears
3. Incorporation of immunization topics into maternal and child health counseling
4. Expanded use of telehealth platforms for vaccine education in remote areas

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