

## A Cross-Sectional Study To Evaluate The Knowledge Levels Of Antenatal Mothers Regarding Immunization Practices At The Primaryhealth Center (Phc), Daultabad, Gurugram, Haryana

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### ABSTRACT

**Background:** Immunization is a proven, cost-effective public health strategy to prevent infectious diseases. Maternal knowledge plays a crucial role in ensuring timely childhood vaccinations, thereby reducing morbidity and mortality. **Objectives:** The present study aims to assess the level of knowledge regarding immunization practices among antenatal mothers attending the Primary Health Centre (PHC) in Daultabad. It seeks to identify the various sources of information that influence maternal knowledge about immunization, such as healthcare workers, media, and community programs. Additionally, the study evaluates the association between selected demographic variables—particularly the educational status of the mothers—and their level of knowledge regarding immunization, in order to understand how socio-demographic factors impact awareness and understanding of essential vaccination practices. **Methods:** A descriptive cross-sectional study was conducted among 30 antenatal mothers using a structured questionnaire (Immunization Knowledge Assessment Tool). Purposive sampling was employed. Data analysis involved descriptive and inferential statistics (Chi-square, Pearson correlation, ANOVA). **Results:** The mean knowledge score was 14.2 (SD = 2.73). Half of the mothers demonstrated moderate knowledge levels. Mothers who cited healthcare providers as their main information source scored significantly higher (mean = 16.8). A positive correlation ( $r = 0.65$ ) was found between education levels and knowledge scores. **Conclusion:** Antenatal mothers demonstrated moderate understanding, but knowledge gaps and misconceptions persist. Strengthening health education interventions during antenatal visits is essential to improve maternal and child immunization outcomes.

**Keywords:** Antenatal mothers, Immunization knowledge, Vaccine awareness, Public health, Maternal education

### INTRODUCTION

Immunization remains one of the most successful and cost-effective public health interventions globally, playing a critical role in reducing morbidity and mortality caused by infectious diseases. Vaccination before and during pregnancy not only protects expectant mothers but also provides passive immunity to newborns, shielding them during the early vulnerable months of life. Maternal immunization against diseases such as influenza and pertussis is strongly recommended to prevent complications in both mother and child.

Despite the availability and proven efficacy of vaccines, significant disparities persist in immunization coverage, particularly in rural and semi-urban areas of India. Lack of knowledge, misconceptions, socio-cultural beliefs, and mistrust of healthcare systems contribute to low vaccine uptake.

Educational status, access to reliable information, and influence of family and community are key factors impacting mothers' decisions regarding immunization.

The Primary Health Center (PHC) at Daultabad in Gurugram, Haryana, is a major provider of antenatal care services to women from nearby rural and semi-urban areas. However, limited studies have evaluated the specific knowledge levels of antenatal mothers visiting this PHC regarding immunization practices. Identifying these knowledge gaps is essential for designing tailored educational interventions, ultimately aiming to increase vaccine acceptance and adherence.

This study was conducted to assess the level of knowledge regarding immunization among antenatal mothers at the PHC Daultabad, identify the primary sources of information influencing their understanding, and evaluate the association between demographic factors, particularly educational attainment, and knowledge levels. The findings are expected to offer insights into current maternal knowledge and to guide healthcare workers and policymakers in framing more effective communication and education strategies to improve vaccination rates and public health outcomes in this region.

## NEED FOR THE STUDY

Immunization remains a cornerstone of maternal and child health strategies worldwide. In India, despite sustained efforts, gaps in vaccine coverage still persist, particularly in rural and semi-urban populations. Pregnant women play a pivotal role in influencing early childhood immunization. However, many antenatal mothers lack adequate knowledge about vaccination schedules, the importance of timely immunization, and the benefits of maternal vaccination during pregnancy.

At the Primary Health Center (PHC) Daultabad, there is limited data available regarding the knowledge levels of antenatal mothers about immunization practices. Understanding the current awareness and informational gaps is vital for designing focused health education programs. Educational interventions during antenatal visits can significantly improve maternal knowledge, leading to better vaccination uptake for both mothers and their infants.

Furthermore, exploring how different sources of information, such as healthcare providers, family, and media, affect maternal knowledge will help strengthen communication strategies. Identifying associations between sociodemographic factors, especially education levels, and immunization knowledge can also help target vulnerable groups.

By addressing these gaps, the study aims to contribute to improved maternal and child health outcomes and support national goals for enhancing immunization coverage and reducing vaccine-preventable diseases.

**According to Sharma et al. (2021)**, maternal knowledge significantly influences childhood immunization practices. Their study revealed that mothers with higher educational levels demonstrated better understanding and adherence to vaccination schedules. The findings emphasized that healthcare providers remain the most trusted source of vaccine-related information, while misinformation from social networks and media can lead to vaccine hesitancy. Therefore, enhancing maternal education through structured counseling sessions during antenatal visits was recommended as a critical strategy to bridge knowledge gaps, improve vaccine acceptance, and strengthen community health outcomes.

## AIM OF THE STUDY

The study aims to assess the knowledge levels regarding immunization practices among antenatal mothers attending the Primary Health Center (PHC) in Daultabad, Gurugram. It seeks to identify the sources of information influencing their knowledge and to examine the relationship between demographic variables and knowledge levels. The findings will assist in formulating targeted interventions to enhance maternal immunization awareness and practices.

## RESEARCH METHODOLOGY

This study aims to assess the level of knowledge regarding immunization practices among antenatal mothers at the Primary Health Center (PHC), Daultabad, Gurugram, Haryana. It further seeks to identify the various sources of information that influence maternal knowledge related to immunization and to evaluate the association between selected demographic variables—particularly educational status—and the knowledge levels of antenatal mothers.

Adopting a **quantitative research approach**, the study is designed as a **descriptive cross-sectional study**. The study was conducted at PHC Daultabad, with the population comprising all antenatal mothers attending the center for antenatal care. A sample of 30 antenatal mothers was selected using the **purposive sampling technique**.

For data collection, a structured instrument titled the **Immunization Knowledge Assessment Tool (IKAT)** was used. This tool consisted of 20 items, including multiple-choice questions (MCQs), true/false items, and Likert scale-based attitude statements. The questions covered key domains such as basic immunization knowledge, vaccine schedules, the importance of common vaccines, prevailing misconceptions, and maternal attitudes toward immunization.

To ensure the reliability of the tool, a **pilot study** was conducted among five antenatal mothers at a comparable PHC. The tool demonstrated good internal consistency with a **Cronbach's alpha value of 0.82**, and no major changes were required following the pilot.

The **inclusion criteria** for the study were antenatal mothers aged 18 years and above, those attending the PHC for antenatal care, and those who provided informed consent. Mothers who did not reside in the study area or had no previous exposure to immunization education during antenatal visits were excluded.

The **data collection procedure** involved approaching eligible mothers, obtaining informed consent, and administering the questionnaire in a private setting to maintain confidentiality and promote honest responses. All responses were securely recorded for later analysis.

Data were analyzed using **SPSS version 25** and **R software**. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the data. Inferential statistics included the **Chi-square test** to assess the association between sources of information and knowledge levels, **Pearson correlation coefficient** to examine the relationship between education and knowledge scores, and **ANOVA** to compare mean knowledge scores across different education groups.

**Ethical considerations** were strictly followed. Ethical clearance was obtained from SGT University and PHC Daultabad. Written informed consent was taken from all participants, and confidentiality and anonymity were ensured throughout the study.

However, the study had certain **limitations**. The small sample size of 30 limits the generalizability of the findings. Additionally, the cross-sectional nature of the study prevents causal interpretations, and the reliance on self-reported data may introduce response bias.

## RESULTS

**Demographic Characteristics of Participants:** Age, Educational Level, Occupation, Income Level, Marital Status, Parity, Residence, Religion, Socioeconomic Status, Access to Healthcare Services

**Out of 30 antenatal mothers surveyed:**

- Majority (50%) were in the age group 20–25 years.
- 40% had completed high school education, while 60% had graduate or higher education.
- Most participants were in their second trimester of pregnancy.

### Objective 1: Assessing Knowledge Levels

Table 1 shows the distribution of knowledge scores among the participants.

**Table 1: Distribution of Knowledge Scores among Antenatal Mothers**

Score Range	Number of Mothers	Percentage (%)
0–10	5	16.7%
11–15	15	50.0%
16–20	10	33.3%

- Mean Knowledge Score: 14.2
- Standard Deviation: 2.73

**Interpretation:** The majority of antenatal mothers exhibited a moderate level of knowledge regarding immunization practices.

### Objective 2: Sources of Information and Knowledge Scores

Table 2 summarizes the association between sources of information and the average knowledge scores.

**Table 2: Sources of Information and Average Knowledge Scores**

Source of Information	Average Score	Number of Mothers
Healthcare Provider	16.8	10

Source of Information	Average Score	Number of Mothers
Family	12.5	10
Media	14.0	10

- Chi-square Test: Significant association ( $p < 0.05$ ).

**Interpretation:** Mothers who relied primarily on healthcare providers for immunization information scored higher compared to those relying on family or media.

### Objective 3: Relationship Between Demographic Variables and Knowledge

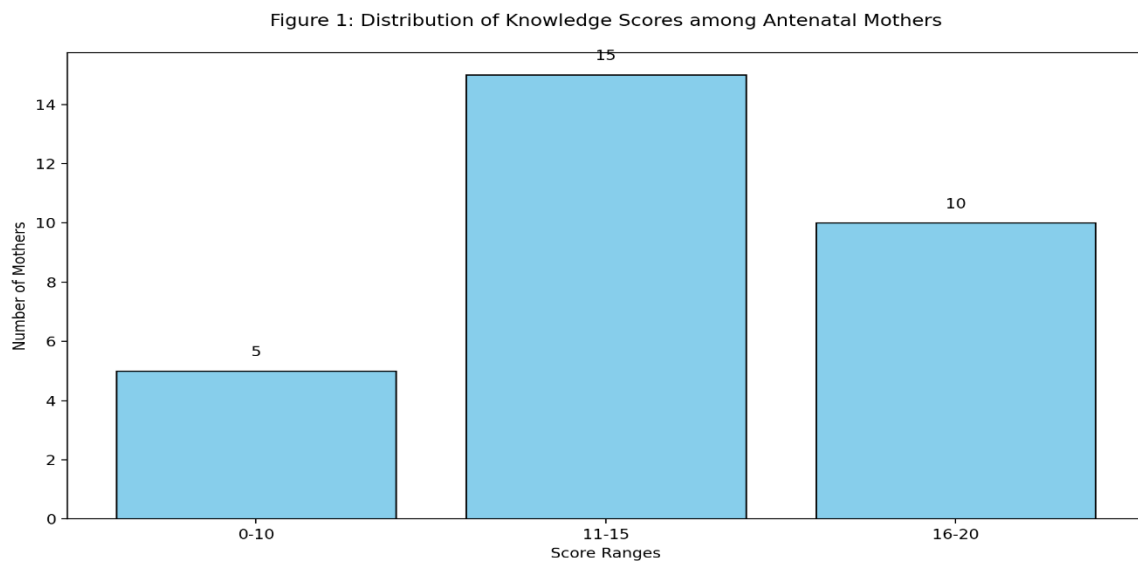
Table 3 demonstrates the relationship between education level and knowledge score.

**Table 3: Education Level and Knowledge Score**

Education Level	Average Score	Number of Mothers
Under Graduate	11.2	6
High School	12.4	10
Graduate	15.1	10
Postgraduate	16.6	4

- Pearson Correlation ( $r$ ): 0.65 (Strong positive correlation).

**Interpretation:** Higher education levels were associated with better knowledge regarding immunization practices.



**Figure 1. Distribution of knowledge scores among antenatal mothers attending PHC Daultabad.**

Here is the bar graph showing the distribution of knowledge scores among antenatal mothers. The X-axis represents the score ranges (0–10, 11–15, 16–20), and the Y-axis shows the number of mothers in each range. You can see that most mothers fall into the 11–15 score range, with fewer in the lowest and highest ranges. This gives a clear visual summary of how knowledge scores are distributed in your sample.

- X-axis: Score Ranges (0–10, 11–15, 16–20)
- Y-axis: Number of Mothers
- Bars: Height representing 5, 15, and 10 mothers respectively.

## DISCUSSION

The findings of the present study reveal that antenatal mothers attending PHC Daultabad possess a moderate level of knowledge regarding immunization practices. The mean knowledge score of 14.2 (SD = 2.73) suggests that while a basic understanding of immunization exists among participants, notable gaps and misconceptions persist, especially regarding vaccine schedules and the importance of timely immunization during pregnancy.

A key observation was the influence of information sources on knowledge levels. Mothers who cited healthcare providers as their main source of information had significantly higher knowledge scores compared to those who relied on family or media sources. This finding aligns with previous research by Sharma et al. (2021), which emphasizes the crucial role of healthcare workers in disseminating accurate immunization information and combating misinformation.

Another significant finding is the strong positive correlation ( $r = 0.65$ ) between education level and knowledge scores. Mothers with postgraduate education displayed the highest levels of understanding, whereas those with lower educational attainment were more likely to harbor misconceptions. This emphasizes the need for customized education programs, particularly targeting less educated antenatal mothers, to ensure equitable access to immunization knowledge.



The study's results are consistent with similar studies conducted in rural and semi-urban parts of India, where knowledge gaps remain a major barrier to optimal immunization coverage. Although the PHC setting provides a valuable opportunity for counseling during antenatal visits, additional strategies such as health talks, posters, audiovisual aids, and community-based interventions are necessary to reinforce key messages.

Overall, the findings stress the urgent need to strengthen maternal immunization education efforts during antenatal care. Empowering mothers with correct knowledge will ultimately enhance vaccine uptake, reduce preventable diseases, and improve child survival outcomes in the region.

## CONCLUSION

The present study evaluated the knowledge levels regarding immunization practices among antenatal mothers attending the PHC in Daultabad, Gurugram. The findings indicate that while most mothers demonstrated a moderate level of knowledge, significant gaps and misconceptions remain. Sources of information greatly influenced understanding, with mothers who relied on healthcare providers exhibiting higher knowledge scores compared to those influenced by family or media.

A strong positive correlation was observed between education level and immunization knowledge, highlighting the crucial role of maternal education in promoting better health practices. These findings underscore the need for targeted educational interventions, particularly aimed at mothers with lower educational backgrounds, to ensure comprehensive and equitable knowledge dissemination.

Strengthening antenatal counseling, improving the quality of health communication, and employing varied educational strategies such as posters, pamphlets, and interactive sessions can help bridge the existing gaps. By enhancing maternal knowledge during pregnancy, immunization coverage for infants can be significantly improved, contributing to better maternal and child health outcomes in the community.

The study emphasizes that investing in maternal education about immunization is essential to support national and global health initiatives aimed at eradicating vaccine-preventable diseases.

## Conflict of Interest

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

## Funding Source

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