

Original Research Article

A KNOWLEDGE, ATTITUDE AND PRACTICE STUDY REGARDING IMMUNIZATION OF CHILDREN AMONGST PARENTS COMING TO TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Immunization is one of the most effective public health interventions for preventing childhood morbidity and mortality due to vaccine-preventable diseases. Although India has achieved considerable progress in childhood immunization coverage, inadequate parental knowledge and misconceptions may contribute to delayed or incomplete vaccination. Assessing parental knowledge is therefore important for identifying areas requiring targeted health education and counselling. **Aim:** To assess the knowledge regarding childhood immunization among parents attending a tertiary care teaching hospital in Ahmedabad.

Materials and Methods: A cross-sectional, hospital-based observational study was conducted among 500 parents/primary guardians of children attending the paediatric outpatient department or admitted to the paediatric ward of a tertiary care teaching hospital in Ahmedabad from April 2023 to March 2024. Data were collected through face-to-face interviews using a pre-structured and validated questionnaire. The knowledge domain consisted of 13 questions, with one point assigned for each correct response and zero for an incorrect response. Knowledge was categorized as poor (0–4), average (5–8) and good (>8).

Results: Among the 500 participants, 111 (22.2%) parents had good knowledge regarding childhood immunization, 249 (49.8%) had average knowledge and 140 (28.0%) had poor knowledge. Regarding individual knowledge indicators, 71.6% of parents knew that vaccination should be given at birth and 71.0% recognized that vaccines prevent diseases. However, knowledge regarding vaccination during minor illnesses was comparatively limited. Only 46.2% knew that vaccination could be given during cough and cold, 36.0% during fever and 42.2% during loose stools or diarrhoea. Knowledge regarding optional vaccines was also limited, with only 32.6% reporting awareness.

Conclusion: The study demonstrated that parental knowledge regarding childhood immunization was predominantly average, with a substantial proportion of parents having poor knowledge. Although awareness regarding the preventive role of vaccines and vaccination at birth was relatively good, important gaps were identified regarding vaccination during minor illnesses, optional vaccines and other aspects of the immunization schedule. Strengthening routine parental counselling and providing clear, reliable information through healthcare professionals may help improve parental knowledge and support timely and complete childhood immunization.

Keywords: Childhood Immunization, Parental Knowledge, Vaccination, Vaccine-Preventable Diseases, Parents, Immunization Schedule, Health Education.

INTRODUCTION

Immunization is one of the most effective and cost-effective public health interventions for reducing childhood morbidity and mortality due to vaccine-preventable diseases. By providing protection against several serious infectious diseases, vaccination contributes substantially to child survival and remains an essential component of primary healthcare and disease prevention programmes worldwide.^[1,2]

The Expanded Programme on Immunization (EPI) was launched by the World Health Organization in 1974 to improve protection against major vaccine-preventable diseases. India subsequently introduced the Expanded Programme on Immunization in 1978, which was later expanded and incorporated into the Universal Immunization Programme (UIP). The UIP has since become one of the largest public health programmes in the country, providing vaccines to millions of children and pregnant women every year.^[3,6]

Despite substantial progress in immunization coverage, achieving complete and timely vaccination remains a public health challenge. Several factors can influence childhood vaccination, including inadequate parental knowledge, misconceptions regarding vaccines, concerns about adverse events following immunization, childhood illness, cultural beliefs and difficulties in completing the recommended vaccination schedule. Vaccine hesitancy and misinformation may further influence parental decisions regarding vaccination and can contribute to delayed or missed doses.^[4,5]

The complexity of childhood vaccination schedules has also increased with the introduction of additional vaccines and modifications in recommended schedules. Appropriate knowledge among parents regarding the timing, benefits, safety and completion of vaccination is therefore important for ensuring that children receive vaccines at the recommended ages. Understanding parental knowledge can help identify specific misconceptions and information gaps that may contribute to incomplete or delayed immunization.^[7] India has made considerable progress in childhood immunization. According to the National Family Health Survey-5, conducted during 2019–21, the full immunization coverage among children in India was approximately 76%.^[9] Gujarat has also demonstrated high levels of childhood vaccination, although gaps and dropout between different vaccine doses continue to exist. NFHS-5 data indicate that vaccination cards were available for a large proportion of children in Gujarat, reflecting improvements in documentation of immunization.^[9] Several national initiatives have been implemented to improve immunization coverage and increase awareness regarding vaccination. National Vaccination Day provides an opportunity to promote the importance of timely immunization and

address vaccine-related misconceptions, while government programmes such as Mission Indradhanush focus particularly on areas and populations with low or incomplete immunization coverage.^[10]

Healthcare professionals, particularly doctors and primary healthcare workers, remain important sources of accurate information regarding childhood immunization. Assessment of parental knowledge can therefore provide useful information about their understanding of vaccination and help identify areas where targeted counselling and health education may be required.^[1,4]

In view of the continuing importance of timely and complete childhood immunization, the present study was undertaken to assess the knowledge regarding childhood immunization among parents attending a tertiary care teaching hospital in Ahmedabad.

MATERIALS AND METHODS

Study Design and Study Setting

The present study was a cross-sectional, hospital-based observational study conducted in the Department of Paediatrics of a tertiary care teaching hospital in Ahmedabad. The study was conducted over a period of one year, from April 2023 to March 2024.

Study Population

The study population comprised parents/primary guardians of children attending the paediatric outpatient department or admitted to the paediatric ward during the study period.

Inclusion Criteria

Parents/guardians of children attending the paediatric outpatient department or admitted to the paediatric ward were included in the study.

Exclusion Criteria

Parents who were unwilling to provide consent for participation in the study were excluded.

Sample Size

The sample size was calculated using the formula:

$$n = 4pq/l^2$$

where:

- $p = 76\%$, representing the reported immunization coverage in India
- $q = 24\%$, calculated as $100 - p$
- $l = 4\%$, representing the allowable error

Using the above parameters, the calculated sample size was 456. The sample size was rounded up, and 500 participants were included in the study.

Sampling and Data Collection

Parents or primary guardians accompanying children attending the paediatric outpatient department or admitted to the paediatric ward were screened for eligibility. Following approval from the Institutional Ethics Committee, written informed consent was obtained from the participating parent or primary guardian.

Relevant information regarding the child's immunization was obtained from the history and vaccination card wherever available. A pre-structured questionnaire was administered to the parents. The questionnaire had been approved by the local institutional review body and was stated to have been validated. Data were collected through face-to-face interviews conducted by the primary investigator, with explanation in the vernacular language when required.

Assessment of Knowledge Regarding Immunization

For the present article, the knowledge domain of the original thesis was selected as the primary study objective.

A total of 13 questions were included in the knowledge domain. Each correct response was assigned a score of 1, whereas an incorrect response was assigned a score of 0, giving a possible total score ranging from 0 to 13. Based on the total knowledge score, participants were categorized into:

- Poor knowledge: 0–4
- Average knowledge: 5–8
- Excellent knowledge: >8

The knowledge questions covered important aspects of childhood immunization, including vaccination at birth, vaccine-preventable disease, vaccine safety, vaccination during minor illness, vaccination schedule, sources of information, booster doses, optional vaccines and adverse effects following vaccination.

Ethical Considerations

Institutional Ethics Committee approval was obtained before commencement of data collection. Written informed consent was obtained from the parent or primary guardian before participation.

Statistical Analysis

The collected data were entered and analysed using appropriate statistical methods. Descriptive statistics were used to summarize the demographic characteristics and responses to individual knowledge questions. Knowledge scores were categorized according to the predefined scoring system described above. Appropriate statistical tests were applied for analysis and comparison of the study variables.

RESULTS

Table 1 shows the age distribution of the children included in the study. The largest proportion of children belonged to the 1–2 years age group (24.0%), followed by 2–5 years (21.6%) and 5–10 years (20.2%). Children aged 0–6 months constituted 15.2% of the study population, while 10.2% were aged 10–14 years and 8.8% were aged 7–12 months.

Table 2 presents the selected sociodemographic characteristics of the study participants. Among the children, 59.0% were male and 41.0% were female. Regarding maternal education, 37.0% of mothers were illiterate, 31.6% had education up to primary level, 20.4% up to secondary level, 6.4% up to higher secondary level and 4.6% were graduates. Most participants were from urban areas (74.6%), while 25.4% belonged to rural areas.

Table 3 describes the immunization status of the children. Overall, 50.8% of children were fully immunized, whereas 39.6% were partially immunized. A total of 9.6% of children were unvaccinated, indicating that a considerable proportion of children had either incomplete or no immunization.

Table 4 presents selected indicators of parental knowledge regarding childhood immunization. About 71.6% of parents knew that vaccination should be given at birth, while 71.0% recognized that vaccines prevent diseases. Regarding vaccine safety, 73.2% reported that vaccines were not harmful or did not cause side effects. Knowledge regarding vaccination during minor illnesses was comparatively lower, with 46.2% reporting that vaccination could be given during cough and cold, 36.0% during fever and 42.2% during loose stools or diarrhoea. Although 77.0% of parents reported that they would follow the mandatory vaccination schedule, only 32.6% reported knowledge regarding optional vaccines.

Table 5 shows the overall knowledge level of parents regarding childhood immunization based on the 13-item knowledge score. Among the 500 parents, 111 (22.2%) had good knowledge, 249 (49.8%) had average knowledge and 140 (28.0%) had poor knowledge. Thus, nearly half of the parents demonstrated an average level of knowledge, while more than one-fourth had poor knowledge regarding childhood immunization.

Table 1. Age distribution of children

Age group	Frequency (n)	Percentage (%)
0–6 months	76	15.2
7–12 months	44	8.8
1–2 years	120	24.0
2–5 years	108	21.6
5–10 years	101	20.2
10–14 years	51	10.2
Total	500	100.0

Table 2. Sociodemographic characteristics of study participants

Characteristic	Frequency (n)	Percentage (%)
Gender of child		
Male	295	59.0
Female	205	41.0
Mother's education		
Illiterate	185	37.0
Up to primary	158	31.6
Up to secondary	102	20.4
Up to higher secondary	32	6.4
Graduate	23	4.6
Place of residence		
Rural	127	25.4
Urban	373	74.6

Table 3. Immunization status of children

Immunization status	Frequency (n)	Percentage (%)
Fully immunized	254	50.8
Partially immunized	198	39.6
Unvaccinated	48	9.6
Total	500	100.0

Table 4. Selected knowledge indicators regarding childhood immunization

Knowledge indicator	Yes n (%)	No n (%)
Vaccination should be given at birth	358 (71.6)	142 (28.4)
Vaccines prevent disease	355 (71.0)	145 (29.0)
Vaccines are not harmful/do not cause side effects	366 (73.2)	134 (26.8)
Vaccination can be given during cough and cold	231 (46.2)	269 (53.8)
Vaccination can be given during fever	180 (36.0)	320 (64.0)
Vaccination can be given during loose stools/diarrhoea	211 (42.2)	289 (57.8)
Will follow mandatory vaccination schedule	385 (77.0)	115 (23.0)
Knows about optional vaccines	163 (32.6)	337 (67.4)

Table 5. Overall knowledge level regarding childhood immunization

Knowledge category	Score range	Frequency (n)	Percentage (%)
Good	>8	111	22.2
Average	5–8	249	49.8
Poor	0–4	140	28.0
Total		500	100.0

DISCUSSION

The present study assessed parental knowledge regarding childhood immunization among 500 parents attending a tertiary care teaching hospital in Ahmedabad. The findings demonstrated that although several parents had satisfactory knowledge regarding the importance and benefits of vaccination, important gaps were observed in knowledge related to vaccination during minor illnesses, booster doses and optional vaccines. Overall, 22.2% of parents had good knowledge, 49.8% had average knowledge and 28.0% had poor knowledge.

In the present study, 71.6% of parents knew that vaccination should be given at birth and 63.6% correctly identified birth as the appropriate time for initiation of vaccination. This indicates reasonable awareness regarding the importance of early childhood immunization. The Universal Immunization Programme and associated national immunization activities have emphasized timely vaccination as an essential component of child health services. Continued implementation of immunization activities through the National Health

Mission may contribute to improving awareness and timely vaccine uptake among families.^[11]

A relatively high proportion of parents (71.0%) understood that vaccines prevent diseases, while 73.2% did not consider vaccines to be harmful or associated with adverse effects. These findings suggest that most parents recognized the preventive role and general safety of vaccination. Nevertheless, misconceptions and concerns regarding vaccine-related adverse events remain important barriers to immunization. National immunization initiatives, including Intensified Mission Indradhanush, have emphasized improving vaccination coverage and strengthening awareness, particularly among populations with gaps in routine immunization.^[12] Knowledge regarding vaccination during minor childhood illnesses was comparatively inadequate. Only 46.2% of parents reported that vaccination could be given when the child had cough and cold, while only 36.0% knew that vaccination could be given in the presence of fever. Similarly, 42.2% recognized that vaccination could be given when the child had loose stools or diarrhoea. These findings highlight a potentially important area for parental counselling because misconceptions about contraindications can result in unnecessary

postponement of vaccination and subsequent missed opportunities.

The present study also found that 77.0% of parents expressed willingness to follow the mandatory vaccination schedule. However, knowledge regarding booster doses was limited, with 45.8% of parents reporting that they did not know about booster doses. Only 31.2% understood that booster doses provide additional protection. This gap indicates that parental understanding of immunization may be adequate for primary vaccination but less satisfactory for subsequent doses. Strengthening communication regarding the complete vaccination schedule, including booster doses, should therefore be an important component of routine immunization counselling.

Only 32.6% of parents reported knowledge regarding optional vaccines, while 67.4% did not know about them. This finding may partly reflect differences in vaccine availability, recommendations and counselling between public and private healthcare settings. Parents may therefore benefit from clear, individualized information from healthcare providers regarding vaccines appropriate for their child's age and circumstances.

Healthcare providers represented the most common source of immunization information in the present study, with 40.8% of parents identifying UHC/PHC/doctor as their source. Mass media accounted for another 34.8%, whereas friends and relatives accounted for 18.0%. This finding emphasizes the important role of healthcare professionals in providing reliable vaccine information and correcting misconceptions. National immunization programmes can be strengthened further by integrating consistent counselling messages into routine contacts with parents.

The findings should also be considered in the context of India's successful progress in polio eradication. India was certified polio-free by the World Health Organization in 2014, following sustained national and global eradication efforts.^[13,14] This achievement demonstrates the potential impact of coordinated immunization programmes, community participation and sustained public-health communication. Maintaining similar momentum across routine childhood immunization requires continued engagement with parents and communities.

The study also identified a considerable gap between awareness of vaccination in general and knowledge of specific vaccination-related issues. While approximately three-fourths of parents understood the preventive role of vaccines and were willing to follow the mandatory schedule, substantially fewer parents had knowledge regarding vaccination during childhood illness, booster doses and optional vaccines. This suggests that simply encouraging vaccination may not be sufficient; parental counselling should address specific practical questions that arise during the vaccination journey.

Community-level immunization best practices and locally adapted health education strategies can further support routine vaccination by improving communication, addressing misconceptions and encouraging families to complete the recommended schedule.^[15] Health workers, doctors, community volunteers and mass-media platforms can therefore work together to provide consistent and understandable information to parents.

Overall, the present findings indicate that parental knowledge regarding childhood immunization was predominantly at an average level, with substantial scope for improvement. The relatively high proportion of parents with average or poor knowledge highlights the need for continuous, structured and age-appropriate counselling during paediatric visits. Particular emphasis should be placed on the timing of vaccines, vaccination during minor illnesses, booster doses, optional vaccines and recognition of common adverse events.

CONCLUSION

The present study demonstrated that parental knowledge regarding childhood immunization was predominantly **average**, with 49.8% of parents having average knowledge, 22.2% having good knowledge and 28.0% having poor knowledge. Although most parents recognized the preventive benefits of vaccination and expressed willingness to follow the recommended vaccination schedule, important knowledge gaps were observed regarding vaccination during minor illnesses, booster doses and optional vaccines.

Healthcare professionals were the most frequently reported source of immunization information, emphasizing the importance of effective counselling during routine paediatric care. Strengthening parental education through healthcare providers, community-based programmes and reliable mass-media communication may help address misconceptions and improve understanding of timely and complete childhood immunization. Continued implementation of national immunization initiatives, including intensified efforts to reach under-immunized populations, remains important for improving vaccination coverage and sustaining gains in child health.

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