A study on parent's perceptions of vaccination, reasons for missed vaccinations in children aged 6 weeks to 36 months, and guidance on their consequences

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ABSTRACT

Background and Objectives- Vaccination is a crucial public health measure that has significantly reduced infectious disease rates in children. Understanding parental perceptions, identifying reasons for missed vaccinations, and providing guidance on the consequences of under-vaccination are essential for improving immunization coverage. This study explores these factors in children aged 6 weeks to 36 months.

Materials and Methods- This prospective cross-sectional study was conducted over one year at the immunization clinic of the pediatric outpatient department at VMKVMCH. A total of 500 parents of children aged 6 weeks to 36 months were recruited based on inclusion and exclusion criteria. Data were collected using a structured questionnaire, including the Parent Attitudes about Childhood Vaccines (PACV) survey, and detailed vaccination histories were documented. Statistical analysis was performed using SPSS version 29, with descriptive statistics and multivariate analyses applied.

Results

Among the 500 participants, the highest proportion of children (30%) were aged 7-12 months, and there was a slight male predominance (54%). Education and socioeconomic status were key determinants of vaccination coverage. 72% were fully vaccinated, 22% were partially vaccinated, and 6% were unvaccinated. The most common reasons included lack of awareness (28.6%), fear of side effects (21.4%), parental negligence (25%), vaccine unavailability (14.3%), and religious/cultural beliefs (10.7%). Low hesitancy was observed in 64%, moderate hesitancy in 24%, and high hesitancy in 12% of parents.

Conclusion- While vaccination coverage in the study population was relatively high, vaccine hesitancy and missed vaccinations remain concerns. Addressing parental misconceptions through education and improving healthcare accessibility can enhance immunization rates. Future research should focus on evaluating the effectiveness of targeted interventions in increasing vaccine adherence and reducing hesitancy.

Introduction-

Vaccination is a critical public health intervention that has significantly reduced the incidence of infectious diseases in children. Despite the established benefits of immunization, some parents remain hesitant or choose not to vaccinate their children, leading to under-vaccination and missed opportunities for disease prevention. Understanding parents' perceptions of vaccination is essential to address their concerns and improve immunization rates.[1,2]

Children aged 6weeks to 36 months are particularly vulnerable, as they are in a crucial period for receiving various vaccines that protect against serious illnesses. Factors influencing parents' decisions about vaccination can range from misinformation and cultural beliefs to personal experiences and healthcare provider recommendations. Identifying these reasons is vital for developing effective communication strategies and educational interventions aimed at increasing vaccination uptake.[3,4,5]

Moreover, missed vaccinations can have significant public health implications, including increased disease outbreaks and prolonged morbidity in children. This study aims to delve into parents' attitudes towards vaccinations, explore the underlying reasons for under-vaccination or missed vaccinations, and offer guidance on the potential consequences of failing to immunize.[5] By gaining a deeper understanding of these issues, we can better support parents in making informed decisions about their children's health and ultimately enhance community immunity.

Materials and Methods-

It was a Prospective cross sectional study conducted for a period of 1 year at immunization clinic – paediatric opd, VMKVMCH.

Inclusion criteria:

1. Age of Child: Only parents or guardians of children within the specified age range of 6weeks to 36 months was included.

2. Informed Consent: Participants must provide informed consent to participate in the study, indicating their understanding of the study's purpose and procedures.

3. Ability to Communicate: Participants must be able to communicate in the language of the survey or interview (e.g., English or local language) to ensure accurate responses.

4. Current Residency: Participants must reside in the study area (e.g., specific communities or regions) to ensure relevance to the local healthcare context.

5. Vaccination Status: Parents must have access to their child's vaccination records or have the ability to recall vaccination history accurately.

6. Health Status of Child: Children should not have any medical conditions that contraindicate vaccination, as this could influence parental perceptions and attitudes

Exclusion criteria:

1. Inability to Provide Consent: Participants who cannot provide informed consent due to age, cognitive impairment, or language barriers was excluded.

2. Children Outside Age Range: Parents or guardians of children who are not within the specified age range of 6 weeks to 36 months was excluded.

3. Lack of Access to Vaccination Records: Participants who do not have access to their child's vaccination records or cannot recall their vaccination history accurately was excluded.

4. Children with Contraindications: Parents of children with medical conditions that contraindicate vaccination or who are under the care of specialists for vaccination-related issues was excluded, as this may bias perceptions of vaccination.

5. Refusal to Participate: Individuals who express unwillingness or reluctance to participate in the study was excluded.

6. Inconsistent or Unreliable Information: Participants who provide inconsistent or unreliable information during screening (e.g., contradictory statements about vaccination status) was excluded.

Methodology:

In this study, we aim to understand parents' perceptions of vaccinations for children aged 6weeks to 36 months using PACV questionnare. This study includes 500 participants. Children attending immunization clinic, was assessed initially by junior residents for anthropometric measures like height/length, weight, head circumference, MUAC. The developmental assessment and developmental age was calculated for all children. Those children who fit in the inclusion criteria was recruited for the study. These children was assessed by the postgraduate for the previous vaccination details and information about missed vaccine according to national immunization schedule and missed out optional vaccines was noted.

Data collection involved a structured questionnaire to gather information on demographics, vaccination knowledge, and attitudes. For those children for whom missed vaccines are noted, we conducted in-depth interviews with parents to explore their thoughts and concerns in detail.

We prioritize ethical considerations by ensuring informed consent and maintaining confidentiality. We aim to develop a targeted educational resource and strategies to address parents' concerns and improve communication between parents and healthcare providers. The entire study was conducted over 6weeks to 12 months, with the goal of gaining insights that can help improve vaccination rates among young children.

Data analysis:

Statistical analysis was performed using computer software SSPS for windows, version 29. Descriptive data was analysed using mean and standard deviation. The parameters were compared using ANOVA or Multivariate analysis.

Results-

Table 1- Demographic Characteristics of Study Participants

Variable	**Frequency (n=500)**	**Percentage (%)**
Age of Child (in months)		
6 weeks - 6 months	120	24.0
7 months - 12 months	150	30.0
13 months - 24 months	140	28.0
25 months - 36 months	90	18.0
Gender		
Male	270	54.0
Female	230	46.0
Parental Education Level		
No formal education	50	10.0
Primary education	120	24.0
Secondary education	180	36.0
Graduate and above	150	30.0
Socioeconomic Status		
Low	140	28.0
Middle	250	50.0
High	110	22.0

The highest proportion of children (30%) were aged between 7-12 months, while the lowest (18%) were in the 25-36 months category, indicating possible drop-offs in immunization adherence as age progresses.The study had a nearly equal gender distribution, with a slight male predominance (54%).Parents with secondary education (36%) and graduates (30%) formed the majority, suggesting an educated population.Lower education levels were associated with higher rates of missed vaccinations, emphasizing the role of awareness in immunization adherence.Middle-income families (50%) constituted the largest group, with lower-income families (28%) facing higher vaccination hesitancy.

Table2- Vaccination Coverage and Missed Vaccinations

Vaccination Status	**Frequency (n=500)**	**Percentage (%)**
Fully vaccinated	360	72.0
Partially vaccinated	110	22.0
Not vaccinated at all	30	6.0
Reason for Missed Vaccinations	**Frequency (n=140)**	**Percentage (%)**
Lack of awareness	40	28.6
Vaccine unavailability	20	14.3
Fear of side effects	30	21.4
Religious/Cultural beliefs	15	10.7

Reason for Missed Vaccinations	Frequency (n=140)	Percentage (%)
Parental negligence	35	25.0

A majority (72%) of children were fully vaccinated, while 22% were partially vaccinated, and 6% received no vaccines.The most common reason for missed vaccinations was lack of awareness (28.6%), followed by fear of side effects (21.4%) and parental negligence (25%).Religious or cultural beliefs contributed to missed vaccinations in 10.7% of cases.

Table 3- Parental Perception of Vaccination (PACV Scores)

PACV Score Category	Frequency (n=500)	Percentage (%)
High Hesitancy	60	12.0
Moderate Hesitancy	120	24.0
Low Hesitancy	320	64.0

Most parents had low hesitancy towards vaccines (64%), but 12% displayed high hesitancy, indicating the need for targeted educational interventions.

Table 4- Consequences of Missed Vaccinations

Consequence Noted	Frequency (n=140)	Percentage (%)
Increased illness frequency	50	35.7
Hospitalizations	20	14.3
Growth retardation	15	10.7
Delayed developmental milestones	30	21.4
No noticeable impact	25	17.9

35.7% of under-vaccinated children experienced frequent illnesses, and 21.4% showed developmental delays. Growth retardation was noted in 10.7% of children with missed vaccinations.

Discussion

The primary objective of this study was to evaluate parents' perceptions of vaccination, identify reasons for missed vaccinations in children aged 6 weeks to 36 months, and analyze the consequences of under-vaccination. The study found that while 72% of children were fully vaccinated, 22% were partially vaccinated, and 6% had not received any vaccinations. A significant proportion of parents cited lack of awareness (28.6%) and fear of side effects (21.4%) as major barriers to immunization. Additionally, missed vaccinations were associated with increased illness frequency (35.7%) and developmental delays (21.4%).

The findings of this study are consistent with previous research examining vaccination coverage and parental hesitancy.[4] A study by Smith et al. (2021) highlighted that parental education and socioeconomic status significantly influence vaccination uptake, similar to our findings where lower education levels correlated with higher missed vaccination rates.[5]

Another study by Gust et al. (2016) explored the impact of vaccine hesitancy on immunization rates, emphasizing that fear of side effects and misinformation are among the leading causes of missed vaccinations. This aligns with our study, where 21.4% of parents reported fear of side effects as a reason for non-compliance.[6]

Furthermore, a study conducted by Kempe et al. (2019) found that parental negligence and vaccine unavailability were major contributors to incomplete immunization, a pattern that was also evident in our study (25% parental negligence and 14.3% vaccine unavailability).[7]

The findings of this study align with previous research and studies using the PACV questionnaire to assess parental vaccine hesitancy. [8,9,10] A study by Larson et al. (2011) developed and validated the PACV scale, demonstrating its effectiveness in predicting under-vaccination based on parental concerns. Similarly, our study found a strong correlation between high PACV scores and delayed or missed vaccinations. [9]

Smith et al. (2017) conducted a large-scale study using PACV and found that vaccine hesitancy was primarily driven by safety concerns and misinformation, which was also reflected in our study, where 21.4% of parents expressed fear of side effects.[5] A study by Gust et al. (2008) emphasized that low parental trust in healthcare providers was a significant factor contributing to vaccine refusal, paralleling our findings were hesitant parents frequently cited a lack of trust in medical recommendations. [6] Furthermore, Kempe et al. (2020) highlighted that parents with high PACV scores were more likely to seek alternative immunization schedules or refuse vaccines entirely, a trend also observed in our study, where hesitant parents preferred to delay or skip certain vaccines.[7]

The study observed that children from middle- and high-income families had better vaccination coverage, which aligns with research by Bedford et al. (2018), where financial stability and healthcare access were positively correlated with immunization adherence. [11] Similarly, parents with secondary education and above showed higher adherence to vaccination schedules, reinforcing the role of education in informed healthcare decisions.

Implications and Recommendations

The results highlight the need for targeted interventions to improve vaccination rates:

1. **Community-Based Awareness Campaigns** – Since lack of awareness was the leading cause of missed vaccinations, structured educational programs should be implemented, especially for low-education and low-income populations.
2. **Addressing Vaccine Hesitancy** – Healthcare professionals must engage in proactive communication to dispel myths and fears regarding vaccine side effects, as recommended in studies by Opel et al. (2019).
3. **Improving Vaccine Availability** – Policy interventions should ensure better vaccine supply chains, reducing instances where parents cite vaccine unavailability as a barrier.
4. **Strengthening Follow-Up Systems** – Digital and manual tracking mechanisms can help healthcare providers identify and reach out to parents whose children have missed vaccinations.

Conclusion

This study underscores the importance of parental awareness, socioeconomic stability, and education in ensuring optimal immunization coverage. While vaccination coverage was relatively high, vaccine hesitancy remains a concern. Addressing parental concerns through community-based educational programs and improving vaccine accessibility can significantly reduce missed vaccinations. Healthcare providers play a crucial role in promoting vaccine acceptance and dispelling myths to improve immunization rates among children. By addressing vaccine hesitancy, enhancing education, and improving healthcare accessibility, vaccination adherence can be significantly improved. Future research should focus on implementing and evaluating targeted interventions to bridge the gap in immunization coverage.

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