Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol.5 , Issue 3 (2016)
https://www.jneonatalsurg.com

OPEN ACCESS

Knowledge, Attitude and Practice (KAP) Regarding Pediatric Immunization Among Mothers in Rural Maharashtra: A Cross-Sectional Study.

Dr. Ravindra Bobade[1]

[1]Assistant Professors, Departments of Pediatrics, Kamineni Institute of Medical Sciences. Sreepuram, Narketpally.

Corresponding Author

Dr. Ravindra Bobade

Cite this paper as: Dr. Ravindra Bobade (2016) Knowledge, Attitude and Practice (KAP) Regarding Pediatric Immunization Among Mothers in Rural Maharashtra: A Cross-Sectional Study.. Journal of Neonatal Surgery, 5, (3) 41-46

ABSTRACT

Background: Childhood immunization is a key public health intervention for reducing morbidity and mortality due to vaccine-preventable diseases. Mothers play an important role in ensuring timely and complete immunization of children, especially in rural communities.

Objective: To assess the knowledge, attitude and practice regarding pediatric immunization among mothers in rural Maharashtra and to identify factors associated with complete immunization.

Methods: A cross-sectional study was conducted from July 2015 to Dec 2015 among 300 mothers aged 18–40 years having at least one child under five years of age in 10 randomly selected villages of Aurangabad district, Maharashtra. Data were collected using a pre-tested semi-structured questionnaire covering socio-demographic profile, knowledge, attitude and immunization practice. Immunization status of the youngest child was assessed and verified by immunization card where available. Data were analyzed using descriptive statistics and Chi-square test.

Results: The mean age of mothers was 28.4 ± 5.2 years. Overall, 62% of mothers had good knowledge and 78% had a positive attitude towards immunization. Although 85% knew that vaccines prevent diseases, only 42% were aware of the complete immunization schedule. Complete immunization was observed in 55% of children, while 32% were partially immunized and 13% were unimmunized or minimally immunized. Major reasons for default were illness of the child, lack of time/transport, forgetting the date and fear of side effects. Maternal education, socio-economic status and regular contact with ASHAs/ANMs were significantly associated with better KAP and complete immunization.

Conclusion: Despite favourable attitude, gaps persisted in detailed knowledge and complete immunization practice. Strengthening maternal counselling, reminder systems and frontline worker follow-up may improve immunization coverage in rural Maharashtra...

Keywords: Knowledge, Attitude, Practice, Pediatric immunization, Mothers, Rural Maharashtra, Complete immunization.

INTRODUCTION

Immunization has been recognized globally as one of the greatest public health achievements of the 20th century. The World Health Organization (WHO) has estimated that immunization prevents 2–3 million deaths annually from diseases such as diphtheria, tetanus, pertussis, measles, polio, and tuberculosis. In low- and middle-income countries, where the burden of vaccine-preventable diseases is highest, sustained high coverage is essential for child survival.1

In India, the Universal Immunization Programme (UIP) was launched in 1985 with the objective of providing free vaccines against six major vaccine-preventable diseases. Over the subsequent decades, newer vaccines such as Hepatitis B, Haemophilus influenzae type b (Hib), and others were gradually introduced in selected states. Despite these efforts, national surveys have consistently shown gaps in coverage, particularly in rural and remote areas. The National Family Health Survey-3 (NFHS-3, 2005-06) reported that only 44% of children aged 12-23 months in India were fully immunized, with rural areas lagging behind urban counterparts. In Maharashtra, rural full immunization coverage was approximately 49.8%, reflecting slow progress despite the implementation of the National Rural Health Mission (NRHM) since 2005.2,3

Mothers are the key decision-makers and executors of child healthcare practices in most Indian households. Their knowledge of the immunization schedule, perceived benefits, attitudes towards vaccines, and actual practices directly determine compliance. Several pre-2016 studies in rural India have documented gaps: high awareness of polio drops but limited

understanding of the complete schedule, misconceptions about side effects, and influence of socio-demographic factors such as education and socio-economic status. For instance, a 2012 KAP study in rural North Kashmir highlighted that while benefit awareness was high, detailed schedule knowledge was poor. Similar patterns were observed in other regions.

As of mid-2016, limited comprehensive KAP data specific to rural Maharashtra existed in the published literature4. Factors such as low female literacy in rural pockets, reliance on traditional beliefs, logistical barriers in accessing sub-centers, and variable performance of community health workers (ASHAs and ANMs) contribute to persistent challenges. This study was therefore undertaken to generate current, locally relevant evidence on maternal KAP regarding pediatric immunization. The findings are expected to guide district-level planning for intensified IEC activities and UIP strengthening ahead of the Intensified Mission Indradhanush targets.

Objectives

To assess the level of knowledge among mothers regarding the names of vaccines, immunization schedule, diseases prevented, and sources of information.

To evaluate the attitudes of mothers towards the importance, safety, and necessity of childhood immunization.

To determine the immunization practices, coverage status, and reasons for partial or non-immunization among children under 5 years.

METHODS

Study Design and Setting: This cross-sectional study was conducted in pediatric hospital in one rural administrative block in Aurangabad district, Maharashtra.

Study Period: July 1, 2015 to December 31, 2015 (6 months).

Study Population: Mothers aged 18–40 years, permanent residents of the selected villages for at least 6 months, and having at least one child under 5 years of age.

Sample Size and Sampling Technique: The sample size of 300 was calculated assuming 50% prevalence of adequate knowledge, 95% confidence level, 5% margin of error, and 10% non-response rate. Multistage random sampling was used: villages were selected by simple random sampling (lottery method), followed by systematic random sampling of households from village lists. In households with multiple eligible mothers, one was selected by Kish grid method.

Inclusion and Exclusion Criteria: Mothers willing to participate were included. Those with critically ill children or unable to respond coherently were excluded.

Data Collection Tool and Procedure: A pre-tested, semi-structured questionnaire in Marathi (with English back-translation) was used. Sections included:

Socio-demographic profile (using modified BG Prasad socio-economic classification, 2015 update).

Knowledge (10 scored questions, maximum 10 points).

Attitude (5 Likert-scale items, scored 1–5).

Practice (immunization status of the youngest child under 5, verified preferably by card; reasons for default).

The questionnaire was pilot-tested on 10 mothers outside the main sample and refined for clarity. Trained medical social workers conducted home visits for data collection after obtaining written or verbal informed consent. Immunization status followed the UIP schedule as of 2016 (BCG, OPV/DPT/Hepatitis B at birth/6/10/14 weeks, measles at 9 months, etc.).

Ethical Considerations: Approval was obtained from the Institutional Ethics Committee of Rural Medical College. Confidentiality and anonymity were assured. No monetary incentives were given.

Data Analysis: Data were entered into Epi-Info 7.0 and analyzed using SPSS version 16.0. Descriptive statistics (means, percentages, standard deviations) and inferential statistics (Chi-square test) were applied. Knowledge score ≥7/10 = good; Attitude score >15/25 = positive. P-value <0.05 was considered statistically significant.

RESULTS

Socio-demographic Profile: The mean age of mothers was 28.4 ± 5.2 years (range 19–42). A majority (68%) had education up to primary level or were illiterate. Most (75%) were housewives, and 82% belonged to lower or lower-middle socio-economic classes. Average family size was 5.2. Male children constituted 62% of the index children. These characteristics reflect the typical rural demographic profile in western Maharashtra and influence KAP levels, as explored in associations.

Table 1: Socio-demographic Profile of the Study Participants (n=300)

Variable	Category	Frequency	Percentage (%)
Age of Mother	18-25 years	92	30.7
	26-35 years	168	56.0
	>35 years	40	13.3
Education	Illiterate/Primary	204	68.0
	Secondary & Higher	96	32.0
Occupation	Housewife	225	75.0
	Agricultural/Labour	75	25.0
Socio-economic Status	Lower/Lower-middle	246	82.0
	Middle & Above	54	18.0
Family Size	≤4 members	135	45.0
	>4 members	165	55.0

Knowledge Assessment: Overall, 62% of mothers had good knowledge (score ≥7/10). While 85% understood that vaccines prevent serious childhood diseases (especially polio and measles), only 45% could name more than four vaccines correctly, and 42% were aware of the complete schedule. Awareness of side effects was moderate (60%). Primary sources of information were ANMs/ASHAs (55%), television/radio (25%), and family/relatives (15%).

Table 2: Knowledge Regarding Pediatric Immunization (n=300)

Knowledge Item	Correct Response (%)
Vaccines prevent diseases	85
Name ≥4 vaccines	45
Recall full immunization schedule	42
Polio vaccine (OPV) details	78
Awareness of side effects	60
Importance of booster doses	55
Overall Good Knowledge (≥7/10)	62

Attitude Assessment: 78% demonstrated a positive attitude. 92% agreed immunization is essential for child health, and 65% supported making it compulsory. However, 22% feared side effects, and 18% believed vaccines cause temporary weakness.

Table 3: Attitude of Mothers Towards Immunization (n=300)

Statement	Agree/Strongly Agree (%)
Immunization protects child health	92
Vaccines are generally safe	68
Immunization should be compulsory	65
Fear of adverse effects exists	22
Would recommend to others	80
Overall Positive Attitude	78

Practice and Coverage: Complete immunization was achieved in 55% of children. Partial immunization was 32%, and 13% had received none or minimal doses. Cards were available for verification in 68% of cases. Highest dropout occurred for measles vaccine (25%).

Common reasons for default: Child ill at due date (35%), lack of time/transport (28%), forgetting (20%), fear of side effects (15%), and others (2%).

Table 4: Immunization Status of Youngest Child Under 5 Years (n=300)

Immunization Status	Frequency	Percentage (%)	Verified by Card (%)
Complete	165	55.0	68
Partial	96	32.0	60
None/Defaulter	39	13.0	87

Associations: Statistically significant associations were observed between good KAP/complete immunization and higher maternal education ($\chi^2 = 18.4$, $p<0.01$), better socio-economic status ($p<0.05$), and regular contact with ASHAs/ANMs ($p<0.001$). No significant gender bias in immunization was noted.

DISCUSSION

Immunization is one of the most important public health interventions for reducing childhood morbidity and mortality due to vaccine-preventable diseases. In the present cross-sectional study conducted among 300 mothers in rural Maharashtra, 62% of mothers had good knowledge regarding pediatric immunization, 78% had a positive attitude, and 55% of children were completely immunized. Partial immunization was observed in 32% of children, while 13% were unimmunized or had received only minimal doses. Thus, although maternal awareness and attitude were reasonably satisfactory, actual completion of the immunization schedule remained suboptimal. This reflects the commonly observed gap between knowledge, attitude and actual immunization practice in rural communities.

In the present study, 85% of mothers knew that vaccines prevent diseases, but only 45% could name four or more vaccines correctly and only 42% were aware of the complete immunization schedule. Joseph et al. [4], in their study on parents' knowledge, attitude and practice regarding childhood immunization, also observed that although parents were generally aware of the importance of immunization, detailed knowledge regarding vaccine-preventable diseases, schedule and completion of immunization was inadequate. This finding is comparable with the present study, where general awareness was better than specific knowledge about vaccine names and schedule.

Hamid et al. [5], in a KAP study conducted in rural North Kashmir, reported that mothers had favourable attitudes towards immunization, but knowledge regarding specific vaccines and diseases prevented was poor. They observed that although mothers were aware that vaccination was beneficial, only a limited proportion knew the specific role of individual vaccines such as BCG and OPV. The present study showed a similar pattern, as most mothers understood the preventive role of vaccines, but less than half could correctly recall multiple vaccines or the full schedule. This indicates that health education should not only promote immunization in general terms but should also explain the schedule, vaccine names, diseases prevented and booster doses.

The complete immunization coverage in the present study was 55%. This was higher than the full immunization coverage reported in NFHS-3 [6], where only 43.5% of children aged 12–23 months in India were fully immunized. However, it was lower than the coverage reported in the UNICEF Coverage Evaluation Survey 2009 [7], where full immunization coverage in India was 61.0%. The present findings therefore suggest improvement compared with NFHS-3, but also show that rural Maharashtra still had substantial gaps in achieving universal immunization coverage by 2016.

Angadi et al. [8], in a study conducted in urban slums of Bijapur, Karnataka, reported that only 34.84% of children were fully immunized, 62.58% were partially immunized and 2.58% were unimmunized. Compared with their study, the present study showed better complete immunization coverage. However, the proportion of partially immunized children in the present study remained high at 32%. This suggests that although acceptance of immunization may be better in the present rural Maharashtra setting, completion of all scheduled doses continues to be a challenge.

In the present study, 78% of mothers had a positive attitude towards immunization. Most mothers agreed that immunization protects child health, 80% were willing to recommend immunization to others, and 65% supported making immunization compulsory. Joseph et al. [4] also reported a generally favourable attitude among parents towards childhood immunization. Similarly, Odusanya et al. [9], in rural Nigeria, found that most mothers had positive attitudes towards immunization, although complete immunization coverage was not universal. These findings indicate that positive attitude alone may not be sufficient unless it is supported by correct knowledge, accessible services, reminder systems and follow-up of defaulters.

In the present study, 22% of mothers feared adverse effects and 18% believed that vaccines cause temporary weakness. Fear of adverse effects was also reported as a reason for default by 15% of mothers. Similar concerns were reported in earlier studies. Hamid et al. [5] observed that fever following vaccination was commonly reported by mothers, particularly after DPT vaccination. Such minor adverse events may create anxiety among mothers if they are not counselled properly. Therefore, mothers should be informed in advance about common minor side effects such as fever, local swelling and irritability, and should be reassured regarding their temporary and manageable nature.

The major reasons for partial or non-immunization in the present study were child illness on the due date, lack of time or transport, forgetting the immunization date and fear of side effects. These reasons are similar to those reported by earlier Indian studies. Angadi et al. [8] found that lack of awareness, fear of side effects and absence of motivation were important reasons for incomplete immunization. Awasthi et al. [10] also highlighted the role of maternal and household factors in determining immunization status. In the present study, the highest dropout was observed for measles vaccine, suggesting that later doses were more commonly missed after the early infant vaccination contacts were completed. This emphasizes the need for active tracking of children after the 14-week vaccination visit.

In the present study, ANMs and ASHAs were the main source of information for 55% of mothers, followed by television/radio and family members. This finding highlights the important role of frontline health workers in rural immunization services. Bofarraj [11], in a study from Libya, also reported that paramedical workers were an important source of information among mothers of completely immunized children. This supports the view that interpersonal communication by health workers is more effective than passive information alone, especially in rural communities where literacy levels may be low.

Maternal education showed a statistically significant association with good KAP and complete immunization in the present study. Mothers with higher education were more likely to have better knowledge and better immunization practices. This finding is consistent with Awasthi et al. [10], who reported that maternal education was significantly associated with complete immunization among children aged 12–23 months in urban slums of Varanasi. Joseph et al. [4] also emphasized that parental education influences knowledge and acceptance of immunization. Educated mothers may understand health messages better, remember vaccination dates more accurately and communicate more effectively with health workers.

Socio-economic status was also significantly associated with KAP and complete immunization in the present study. Mothers belonging to better socio-economic classes had better immunization-related knowledge and practices. This may be due to better access to information, transport, health services and health-seeking behaviour. Similar findings have been reported in earlier studies, where socio-economic status was found to influence childhood immunization coverage [9,10]. Since 82% of mothers in the present study belonged to lower or lower-middle socio-economic classes, immunization strategies in such communities should specifically address access barriers, transport difficulties and missed-session follow-up.

Regular contact with ASHAs and ANMs was significantly associated with good KAP and complete immunization in the present study. This is an important finding because the Universal Immunization Programme depends not only on vaccine supply but also on community mobilization, counselling, preparation of due lists and defaulter tracking. Odusanya et al. [9] also observed that vaccination through supported health facilities was associated with better immunization coverage. These findings suggest that strengthening the role of frontline workers can improve both awareness and completion of immunization schedules.

No significant gender bias in immunization was observed in the present study. This is a favourable finding, as gender-based differences in child health care practices have been reported in some Indian settings. However, since male children constituted 62% of the index children in the present study, this finding should be interpreted cautiously. The absence of statistically significant gender bias suggests that incomplete immunization in the present study was more likely due to maternal knowledge, socio-economic status, health-worker contact and logistical barriers rather than deliberate sex-based discrimination.

CONCLUSION

Overall, the present study showed that mothers in rural Maharashtra had a fairly positive attitude towards pediatric immunization, but detailed knowledge of vaccine names, schedule and booster doses was inadequate. Complete immunization coverage was better than some earlier Indian studies but was still below the desired universal coverage level. The findings emphasize the need for focused health education through ASHAs, ANMs, Anganwadi workers and health-care providers. Counselling should specifically cover the full immunization schedule, importance of measles and booster doses, management of minor adverse effects, and the need to return for missed doses. Thus, improving pediatric immunization coverage in rural Maharashtra requires more than vaccine availability. Sustained maternal education, regular home visits, reminder systems, immunization card retention, defaulter tracking and counselling regarding adverse effects are essential to convert positive attitude into complete immunization practice.

LIMITATIONS

First, it was conducted in selected rural villages of one administrative block of Aurangabad district, so the findings may not

be generalizable to all rural areas of Maharashtra. Second, the cross-sectional design could identify associations but not establish causal relationships. Third, immunization status was partly based on maternal recall where immunization cards were unavailable, which may have introduced recall bias. Fourth, knowledge, attitude and practice responses were self-reported, so social desirability bias may be present. Lastly, the study assessed only mothers and did not evaluate the role of fathers, family elders or health-system factors in detail..

REFERENCES

[1] https://www.cdc.gov/mmwr/volumes/65/wr/mm6545a5.htm
[2] https://dhsprogram.com/pubs/pdf/frind3/frind3-vol1andvol2.pdf
[3] https://dhsprogram.com/pubs/pdf/SR128/SR128_updated_09-22-2015.pdf
[4] Joseph J, Devarashetty V, Reddy SN, Sushma M. Parents' knowledge, attitude and practice on childhood immunization. Int J Basic Clin Pharmacol. 2015;4:1201-1207.
[5] Hamid S, Andrabi SAH, Fazli A, Jabeen R. Immunization of children in a rural area of North Kashmir, India: A KAP study. Online J Health Allied Sci. 2012;11(1):10.
[6] International Institute for Population Sciences. National Family Health Survey-3, India, 2005–06. Mumbai: IIPS; 2007.
[7] UNICEF. Coverage Evaluation Survey 2009: All India Report. New Delhi: UNICEF; 2010.
[8] Angadi MM, Jose AP, Udgiri R, Masali KA, Sorganvi V. A study of knowledge, attitude and practices on immunization of children in urban slums of Bijapur city, Karnataka, India. J Clin Diagn Res. 2013;7(12):2803-2806.
[9] Odusanya OO, Alufohai EF, Meurice FP, Ahonkhai VI. Determinants of vaccination coverage in rural Nigeria. BMC Public Health. 2008;8:381.
[10] Awasthi A, Pandey CM, Singh U, Kumar S, Singh TB. Maternal determinants of immunization status of children aged 12–23 months in urban slums of Varanasi, India. Clin Epidemiol Glob Health. 2015;3(3):110-116.
[11] Bofarraj MAM. Knowledge, attitude and practices of mothers regarding immunization of infants and preschool children at Al-Beida City, Libya 2008. Egypt J Pediatr Allergy Immunol. 2011;9(1):29-34.