

Parental knowledge on the optional vaccines and the barriers in their use: A rural hospital-based study

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ABSTRACT

Background: Knowledge, attitude, and practices regarding the vaccines administered under the National Immunization Programme have been studied in different settings; however, studies regarding optional or newer vaccines in India are scarce. **Objectives:** To assess the parental knowledge about routine vaccination with special focus on newer vaccines and to identify the reasons for delay/non-administration of newer vaccines. **Materials and Methods:** This study is a cross-sectional study conducted in pediatric immunization clinic of MIMER Medical College, Talegaon (D) from May to September 2016. About 300 parents were interviewed with a semi open questionnaire. **Results:** Over all awareness and knowledge about the newer vaccines was very poor, i.e., only 32.5% of the total respondents. The majority (57.8%) of respondents was totally unaware about the optional vaccines and reasons for not administering the vaccines, despite being aware, were cost factor and travel constraints to the hospital which was present in 5% of the total respondents. **Conclusion:** Lack of knowledge among parents/caregivers about the optional vaccines and those who had knowledge regarding the vaccines, cost and distance to centers where they are available were the major constraints in immunization.

Key words: Awareness, Newer vaccines, Optional vaccines

Immunization has been recognized as one of the most successful and cost-effective strategy for improving child survival all over the world. Over the past few years, a host of newer vaccines have been developed leading to better protection of children from life-threatening illnesses. These vaccines were initially introduced in developed countries and have proved effective in reducing their disease burden [1]. Immunization is vital and it protects nearly 3/4th of children against major childhood illness. Every child has the right to benefit from the appropriate traditional and new lifesaving vaccinations. Unfortunately, those individuals most in need in developing countries are the last to receive this powerful disease preventing product. In India, newer vaccines are at present being offered as “optional vaccines” since they have not been yet incorporated in the Universal Immunization Programme (UIP) [1].

The optional vaccines are available in the market and are also being prescribed by the pediatricians. However, the high cost of vaccines and their non-incorporation in the National Immunization Schedule due to various factors, and nonavailability of information such as efficacy, effectiveness, long-term effects, side effects and indications and contraindications, requires informed decision making by the parents [2]. The developing countries have poor record in the introduction of these newer or optional vaccines. Furthermore, it was found that coverage with these vaccines was reported to be low in comparison with other vaccines given at the same age group [3].

Knowledge, attitude, and practices regarding the vaccines administered under the National Immunization Programme have been studied in different settings; however, studies regarding optional vaccines in India are scarce. In this context, this study was planned to assess parents' knowledge on routine vaccination with special focus on newer vaccines and the extent to which they have been informed regarding the newer vaccines.

MATERIALS AND METHODS

This study is a cross-sectional study conducted in Pediatric Immunization Clinic of MIMER Medical College, Talegaon (D) from May 2016 to September 2016. Prior Institutional Ethical Committee approval was taken. All routine immunization, counseling regarding infant and young child feeding, and growth monitoring services are provided in this outpatient department and it runs on Tuesday, Thursday, and Saturday of every week. Parents of all the children from infancy to 15 years were approached for inclusion in the study.

A preformed structured questionnaire was given to the parents of the recruited children. Translation of the questionnaire in the local language was done for easy understanding. Each questionnaire took about 15 min to complete and in a single day, about 8-10 questionnaires' were completed. Hence, about 27-30 questionnaires were completed per week and it took about 3 months to complete 300 subjects. After obtaining informed verbal consent from the parents,

Table 1: Relation between the SES and the awareness regarding the age at which the optional vaccination to be started (n=300)

SES	n (%)				Total
	Do not know	At birth	1-2 months	After 2 months	
Class I	0 (0.0)	20 (100.0)	0 (0.0)	0 (0.0)	20 (100.0)
Class II	2 (2.2)	78 (86.7)	10 (11.1)	0 (0.0)	90 (100.0)
Class III	2 (1.6)	104 (83.9)	16 (12.9)	2 (1.6)	124 (100.0)
Class IV	8 (12.9)	46 (74.2)	6 (9.7)	2 (3.2)	62 (100.0)
Class V	2 (50.0)	2 (50.0)	0 (0.0)	0 (0.0)	4 (100.0)

Values are n (% of respondents). Chi-square value=39.611, ***p=0.001. SES: Socio-economic status

information was collected about the immunization status with respect to the newer vaccines, age and doses of vaccination, various sociodemographic factors, and reasons for non-immunization of the child. The method used was recall method and the vaccination card. The primary respondent was the mother or father.

The next 2 months were required for the data compilation on Microsoft excel sheet and statistical analysis. The data on categorical variables are shown as n (% of cases). The statistical significance of association between two categorical variables is tested using Chi-square test. The entire data are statistically analyzed using Statistical Package for Social Sciences (SPSS ver. 17.0, Inc., Chicago, USA) for MS Windows.

RESULTS

Of 300 cases, 59 (19.7%) children were <1 year of age, 161 (53.7%) between 1.0 and 4.9 years, 50 (16.7%) between 5.0 and 9.9 years, and 30 (10.0%) were between 10.0 and 14.9 years. Of 300 cases studied, 179 (59.7%) were males and 121 (40.3%) were females. The male to female ratio was 1.48: 1.00. Of 300 respondents, 20 (6.7%) belonged to Class I socioeconomic status (SES) (by Kuppuswamy scale), 90 (30.0%) belonged to Class II, 124 (41.3%) belonged to Class III, 62 (20.7%) belonged to Class IV, and only 4 (1.3%) belonged to Class V status.

All 20 (100.0%) respondents from Class I SES, 78 (86.7%) from Class II SES, 104 (83.9%) from Class III SES, 46 (74.2%) from Class IV SES, and 2 (50.0%) of the 4 parents from Class V SES, responded that the vaccination should be started at birth (Table 1). The distribution of response regarding the age at which the vaccination to be started differs significantly across five groups of SES of the respondents (p<0.00).

Of 300 respondents, 109 (36.3%) were aware about pentavalent vaccine, 141 (47.0%) were aware about inactivated polio vaccine (IPV), 75 (25.0%) showed awareness about *Rotavirus*, 81 (27.0%) about pneumococcal vaccine, 116 (38.7%) about chicken pox vaccine, and 63 (21.0%) were aware about typhoid vaccine (Table 2).

Of 300 respondents, 95 (31.7%) administered pentavalent vaccine, 121 (40.3%) IPV, 57 (19.0%) *Rotavirus* vaccine, 59 (19.7%) pneumococcal vaccine, 96 (32.0%) chicken pox vaccine, and 51 (17.0%) administered typhoid vaccine (Table 3).

Of 14 respondents who were aware but did not administer the pentavalent vaccine, 10 (71.4%) blamed cost issue and 4 (25.6%) had a travel issue to blame. The corresponding figures for other vaccines are shown in Table 4.

Table 2: Awareness among about different types of optional vaccines (n=300)

Awareness regarding	Response (n=300)	n (%)
Penta vaccine	Unaware	191 (63.7)
	Aware	109 (36.3)
IPV	Unaware	159 (53.0)
	Aware	141 (47.0)
Rotavirus	Unaware	225 (75.0)
	Aware	75 (25.0)
Pneumococcal	Unaware	219 (73.0)
	Aware	81 (27.0)
Chicken pox	Unaware	184 (61.3)
	Aware	116 (38.7)
Typhoid	Unaware	237 (79.0)
	Aware	63 (21.0)

IPV: Inactivated polio vaccine

Table 3: Individual optional vaccine awareness and administration

Type of vaccine	Status (n=300)	n (%)
Penta vaccine	Not aware not administered	191 (63.7)
	Aware and not administered	14 (4.7)
	Aware and administered	95 (31.7)
IPV	Not aware not administered	159 (53.0)
	Aware and not administered	20 (6.7)
	Aware and administered	121 (40.3)
Rotavirus	Not aware not administered	225 (75.0)
	Aware and not administered	18 (6.0)
	Aware and administered	57 (19.0)
Pneumococcal	Not aware not administered	219 (73.0)
	Aware and not administered	22 (7.3)
	Aware and administered	59 (19.7)
Chicken pox	Not aware not administered	184 (61.3)
	Aware and not administered	20 (6.7)
	Aware and administered	96 (32.0)
Typhoid	Not aware not administered	237 (79.0)
	Aware and not administered	12 (4.0)
	Aware and administered	51 (17.0)

DISCUSSION

The introduction of newer vaccines propose to create more awareness and demand among parents. Advocacy and social mobilizations are the key steps in implementing the introduction of

newer vaccines in the community [4]. With the recent introduction of so many newer vaccines and the emergence of new infections, it is expected that the National Immunization Schedule needs to be revised. The safety and effectiveness of the newer vaccines have been already proved by various clinical trials [1].

The results of our study revealed that there is inadequate knowledge regarding the optional vaccines which was similar to the study by Selvakumari [3]. In our study, the highest awareness was for IPV (47%). Next in line, pentavalent vaccine had a better awareness (36.3%) which may be attributed to its recent inclusion in National Immunization schedule. These findings were also seen in the study of Selvaraj et al. which showed pentavalent vaccine awareness of 36.7% [4].

Chicken pox vaccine awareness was only 38.7% similar to the Kanpur based study by Nath et al. [1]. This disease has low mortality but high morbidity in childhood. Since its vaccine is highly effective and has good immunity, it can be suggested as an optional vaccine after assessing the affordability of the parents [1]. Very low awareness was found for typhoid vaccine (21%) similar to the study done by Lahariya et al. [2]. The need for typhoid vaccine can be emphasized due to its low cost and the possible decreasing morbidities in school-going children [5].

Awareness about *Rotavirus* vaccine (25%) and pneumococcal vaccine (38.7%) was similar that found in a study done by Nath et al. [1]. The results of our study indicate the need for increasing the knowledge about the *Rotavirus* vaccine which is intended to prevent the infection and its toll – deaths, hospitalization, and medical visits. The need for increasing knowledge and awareness about *Rotavirus* vaccine and pneumococcal vaccine is also reflected from our study which can prevent hospitalization and mortality in under five age group [6,7].

Table 4: Barriers for non-administration of individual optional vaccines

Type of vaccine	Reason	n (%)
Penta vaccine (n=14)	No specific reason	0 (0.0)
	Cost	10 (71.4)
	Travel	4 (25.6)
IPV (n=20)	No specific reason	2 (10.0)
	Cost	14 (70.0)
	Travel	4 (20.0)
Rotavirus (n=18)	No specific reason	2 (11.1)
	Cost	16 (88.9)
	Travel	0 (0.0)
Pneumococcal (n=22)	No specific reason	8 (36.4)
	Cost	14 (63.6)
	Travel	0 (0.0)
Chicken pox (n=20)	No specific reason	4 (20.0)
	Cost	16 (80.0)
	Travel	0 (0.0)
Typhoid (n=12)	No specific reason	2 (16.7)
	Cost	6 (50.0)
	Travel	4 (33.3)

In our study, non-vaccination with optional vaccines was mainly due to lack of awareness. This is due to the lack of information of these newer vaccines at the semi government and government health centers and the parents are given more stress on UIP vaccines and very limited information is shared on the newer vaccines [1]. Government, along with the concerned professional organization needs to take initiative on this front [8]. The cost of vaccines, travel issues to reach the medical centers from remote villages and lower SES were the major deterrents for not taking vaccines among the parents who were aware about some newer vaccines.

Our study has some limitations as sample size was small and this was a hospital-based study conducted only on the parents attending well baby clinic of our hospital and a community-based study would provide us a better estimate of the coverage.

CONCLUSION

The major constraints for vaccination with newer vaccines were lack of knowledge among parents/caregivers and cost of the vaccines and distance from the centers where they are available when parents had knowledge regarding newer vaccines.

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