

Prevalent vaccination practices among Indian Allopathic non-pediatrician doctors for their own children: A proxy indicator of updated knowledge about childhood immunization

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Abstract: *Background:* It has been hypothesized that the general physicians and specialists other than pediatricians operating in the private sectors of India do not access regular updates about the newer, and additional vaccines i.e., non-national schedule vaccines. *Objective:* To learn the vaccination practices of allopathic doctors operating in private sector of India followed by them in their own children, which could serve as a proxy indicator of their knowledge about childhood immunization. *Methodology:* This cross-sectional study was conducted among non-pediatrician and non-specialist Allopathic doctors practicing in Indian private sector, whose last borne child was more than or equal to three and less than 4.5 years of age using an online semi-structured questionnaire. We received valid responses from 49 doctors from Delhi, Uttar Pradesh, Himachal Pradesh and Bihar, within a span of 30 calendar days. *Results:* Compliance with BCG and DPT was 100%. Around 92% babies were completely vaccinated with Oral polio drops (five doses). For rest of the UIP vaccines, including Hepatitis-B, HiB, Measles and Measles Mumps and Rubella combination vaccine; the coverage was poor ranging from 43-86%. Additional vaccines like IPV, Rotavirus, PCV, Varicella, Hepatitis-A and Typhoid were given only in a few of the children; maximum coverage for rotavirus vaccine (42.86%) and minimum for Hepatitis-A (4.00%). *Conclusion:* It could be commented that the complete immunization till date even for the UIP vaccines was nothing better in the children of doctors when compared with the national statistics. It is also likely that at times doctors are unaware of the newer and additional vaccines and their importance in vaccination schedule (presuming cost is not a limiting factor for them).

Keywords: Doctors' Children, Vaccination Practices, Updated Knowledge, New Vaccines.

Introduction

Immunization is a globally proven cost effective intervention for child survival. India decided to launch the Expanded Programme for Immunization in 1978, which was later rechristened as the Universal Immunization Programme (UIP). The UIP targeted six vaccine preventable diseases. The focus of the programme was to improve quality and coverage of immunization services to reduce childhood mortality. UIP played a leading role in reducing the mortality among children through immunization against six vaccine preventable diseases for next 16 years following its launch [1]. Subsequently on and from 2011 six more vaccines were included in UIP [2]. All the vaccines included in the EPI as well as UIP were free of cost and immunization services were made available to the nearest sub-centre or government

health facilities. Yet there are many vaccines which were not included in the UIP but are available and used in the private sectors.

The vaccines available as 'additional/optional' in private sectors were recommended based on extensive and exhaustive review of literature which included latest published research work, vaccine trials, World Health Organization (WHO) position papers, research literature from the vaccine industry, post-marketing surveillance reports, cost-effective analysis, epidemiology of diseases in Indian sub-continent, immunogenicity and safety. They were made available by the producers after approval from the regulatory authorities in our country [3]. Yet, it is mandatory for the providers of these newer, additional and optional to explain and

share all information so that the guardians (parents and caregivers) can provide informed decision regarding the immunization of their wards. The right to decide to opt for the final immunization with these additional and optional vaccines remains with the guardians [4]. In India, a large pediatric population depends on private sector for their immunization coverage, which is provided by pediatricians as well as non-pediatricians (including non-specialists and other specialists) [5]. It had been the personal perception of the investigators of this project that there are no organized continuing medical education (CME) system in India wherein these non-pediatricians/ non-specialists operating in the private sectors get regular updates about the newer, additional and optional vaccines i.e., non-UIP vaccines.

Keeping this hypothesis in the background, this study was planned to find the prevalent vaccination practices followed by the non-pediatrician specialists and non-specialists for their own children (and not the patients). We particularly surveyed the vaccine practices followed in their own children as we believed that it would be the best surrogate of their knowledge and belief toward efficacy/ importance of these additional/newer and optional vaccines in childhood immunization.

Material and Methods

This cross-sectional study was conducted among non-pediatrician/ non-specialist Allopathic doctors practicing in Indian private sector, whose last borne child was more than or equal to three and less than 4.5 years of age. We particularly chose this age group as Hemophilus influenza B (HiB) is available free of cost pan-India in form of a pentavalent vaccine uniformly as an uninterrupted supply in the public sector for last few years only.

An online semi-structured questionnaire was developed using 'Google forms'. It was mailed and/or sent through 'WhatsApp' (instant messaging application) using a purposive sampling technique with a request to undertake the survey. All the personal contacts of the investigators were communicated for participation. One week after first round of sending the mails/ WhatsApp messages, the received forms were cross checked for the non-

responders and completeness of the questionnaire. Incomplete forms and those with their last-born child was more than or equal to three and less than 4.5 years were discarded. A reminder mail and/or WhatsApp message was sent to those who did not respond. We received valid responses from 49 doctors from Delhi, Uttar Pradesh, Himachal Pradesh and Bihar, within a span of 30 calendar days.

In this form, personal details like age, area of residence (rural/ urban), area of specialization, qualification of spouse, number of live children, age of last born child, gender of last born child, mode of delivery and place of birth of this last born child were asked. If this last born child was more than or equal to three and less than 4.5 years of age, they were asked to give details of vaccination (UIP and additional/optional vaccines) including Bacillus Calmette Guerin (BCG), Oral Polio Vaccine (OPV), Diphtheria Pertussis Tetanus (DPT), Hepatitis-B, Hemophilus influenza B (HiB), Inactivated Polio Vaccine (IPV), Rotavirus, Pneumococcal conjugate vaccine (PCV), Vitamin A, Measles, Japanese Encephalitis, Measles Mumps Rubella combination vaccine (MMR), Varicella, Hepatitis-A and Typhoid. They were also asked about the place of vaccination, either acquired from public sector or self-purchased.

We completed the interim analysis of this ongoing project being run on larger scale to cover each of the states of the country. Google forms have an inbuilt data analyzer which provides summary of each variable. However, Google spreadsheets were also used to present the categorical and continuous data in form of proportion and mean respectively.

Results

Among all, 73.47% were non-pediatric specialists and rest was non-specialist general physicians. The mean age of respondents was 36.71 years (\pm SD, 6.42). Around two third (64.7%) had single child and more than half underwent cesarean section during the birth of last born child (54.9%). Private sector was the institute of choice for delivery by 58.8% doctors. Other demographic details are available in Table 1.

	Male	Female	Total
Total	27 (55.10)	22 (44.90)	49 (100)
Mean age (±SD)	36.48 (6.69)	37.00 (6.20)	36.71 (6.42)
Type of residence			
Rural	9 (40.99)	13 (59.01)	22 (100)
Urban	18 (66.67)	9 (33.31)	27 (100)
Area of specialization			
Specialist (non-pediatrician)	21 (58.33)	16 (41.67)	36 (100)
Non-specialist (general physician)	6 (50.00)	6 (50.00)	12 (100)
Qualification of spouse			
Non-doctor	14 (63.59)	8 (36.41)	22 (100)
Non-specialist	9 (50.00)	9 (50.00)	18 (100)
Specialist (non-pediatrician)	4 (44.40)	5 (55.60)	9 (100)
Specialist (pediatrician)	0	0	0
Gender of last born child in birth order			
Male	18 (62.10)	11 (37.90)	29 (100)
Female	9 (45.00)	11 (55.00)	12 (100)

Vaccines	Compliance N (%)	Vaccine availed free of cost from public sector N (%)	Vaccine self- purchased N (%)	Not vaccinated N (%)
Bacillus Calmette Guerin	49 (100)	34 (69.40)	15 (30.60)	0
Oral polio vaccine (minimum five doses)	45 (91.80)	30 (61.20)	15 (30.60)	4 (8.20)
Diphtheria Pertussis Tetanus (minimum four doses)#	49 (100)	30 (61.22)	29 (59.18)	0
Hepatitis B (minimum three doses)#	42 (85.71)	14 (28.57)	28 (57.14)	7 (14.29)
H-Influenza B (minimum three doses)#	21 (42.86)	3 (6.12)	18 (36.73)	28 (57.14)
Inactivated polio vaccine (complete course) #	14 (28.52)	0 (0.00)	14 (100.00)	35 (71.44)
Rotavirus vaccine (complete course)	21 (42.86)	0 (0.00)	21 (100.00)	28 (57.14)
Pneumococcal Conjugate vaccine (complete course)	14 (28.60)	0 (0.00)	14 (100.00)	35 (71.40)
Measles	36 (73.50)	24 (49.00)	12 (24.50)	13 (26.50)
Japanese Encephalitis	6 (12.24)	0 (0.00)	6 (100.00)	43 (87.76)
Vitamin A (minimum one dose)	32 (65.21)	32 (100.00)	0 (0.00)	17 (34.69)
Measles Mumps Rubella	28 (57.10)	11 (22.40)	17 (34.70)	21 (42.90)
Varicella/ Chicken pox vaccine	16 (12.24)	0 (0.00)	16 (100.00)	33 (67.34)
Hepatitis A (complete course)	2 (4.00)	0 (0.00)	2 (100.00)	47 (95.90)
Typhoid	12 (24.50)	4 (8.20)	8 (16.30)	37 (75.50)
# administered either as a component of pentavalent vaccine or individual vaccine				

The detailed analysis of vaccination practices by these health professionals for individual vaccines in their own children are shown in Table 2. Compliance with BCG was 100%; however almost 30% of them purchasing it themselves and only 70% availing the services from public sector. As it is obvious in Table 2, DPT was the only vaccine, for which the immunization status was complete by age in all babies (100% coverage). Around 92% babies were completely immunized for age with Oral polio vaccine drops (five doses). For rest of the UIP vaccines, including Hepatitis-B, HiB, Measles and Measles Mumps and Rubella combination vaccine; the coverage was poor ranging from 43-86%. Japanese Encephalitis was administered in all six babies belonging to the endemic region for this disease (100% compliance). Additional vaccines like IPV, Rotavirus, PCV, Varicella, Hepatitis-A and Typhoid were given only in a few of these children; maximum coverage for rotavirus vaccine (42.86%) and minimum for Hepatitis-A (4.00%).

Vitamin-A (one dose) was administered to 65.21% children only (Table 2). None of these children had received even the second dose of Vitamin-A as prescribed under National Vitamin-A prophylaxis programme.

Quite frequently the vaccines were purchased self and administered self instead of utilizing the public sector. The reason quoted for purchasing the vaccine themselves in all the cases was convenience and saving time. None of the health professional had any concern with the efficacy/safety of the vaccine supply in the public sector.

Discussion

The vaccine preventable deaths in children under the age of five years are directly influenced by immunization coverage in the country which in turn is influenced by the efforts of increasing the coverage by the government. The Government of India has urged the private sector for an expanded role in achieving universal immunization coverage. The UNICEF coverage evaluation survey 2009 reported 9% contribution of private sector providers in immunization coverage, with urban areas private providers contributing to 21 percent [6]. A study conducted on a birth cohort from 2009-12 in 16 states showed a contribution

of 2-5% immunization by the private sector. The major private providers contributing to immunization were from Kerala, Punjab and Haryana [7].

In our country vaccination is not only limited to public sector and pediatricians. Thus, the vaccination coverage in turn depends not only on the public sector and pediatricians but also on the non-specialist allopathic doctors, AYUSH doctors, non-pediatrician specialists, who at times may not be well versed with current vaccination schedules, newer vaccines, their indications, cost-benefit ratio and other facts. There is no inbuilt organized system to update these non-pediatrician allopathic and AYUSH doctors.

In this novel study, we attempted to understand the prevalent vaccination practices of private sector health professionals in their own children. Through this analysis, it was noted that the complete immunization till date (CITD) was nothing better in the children of these doctors when compared with the national statistics [8]. Although the CITD percentage for DPT was 100 percent, it was only 85.71 percent and 42.86 percent for Hepatitis-B and HiB respectively, in spite of these vaccines being available pan-India free of cost in public sector also. Even for the Measles and MMR vaccines, the vaccination coverage was only 73.50 percent and 57.10 percent respectively, which are far below the optimum targets. Another attention seeking point is that Vitamin A was received by only 65.21 percent children, however only one dose. None of the children had received all the recommended doses of Vitamin A as per National Vitamin-A prophylaxis programme.

The newer vaccines added to UIP in recent times and others like IPV, Rotavirus, PCV, Varicella, Hepatitis-A and Typhoid which are not provided in public sector in all the states but are recommended by Indian Academy of Pediatrics either as 'must be given vaccines' or 'may be given vaccine after one to one discussion with parents' were administered only in a few of these children. IPV was given only in 28.52 percent children, typhoid vaccine in 24.50 percent, rotavirus vaccine in 42.86 percent, PCV in 28.60 percent,

Varicella vaccine in 12.24 percent and Hepatitis-A vaccine only in 4 percent. This is notable as many of these additional and newer vaccines like IPV, pneumococcal conjugate vaccine, typhoid and rotavirus have been even introduced in national immunization schedule of some states of our country.

BCG, OPV and Vitamin A were the only vaccines which were commonly availed in maximum from public sector. Most of the health professionals however preferred to buy the vaccine and administer it themselves to their children. The reason quoted for purchasing the vaccine themselves in all the cases was convenience and time saving in all the cases. None of the health professional had any concern with the efficacy/ safety of the vaccine supply in the public sector.

Although this study was limited by its small sample size due to poor response rate, these positive findings are important. The vaccination practices of health practitioners for their own

children are a proxy indicator of their knowledge which they are expected to be well versed with. The results of our study highlight two facts. First, the medical practitioners are as likely to be incompliant with the vaccination of their children as general population. Second, they are likely to be unaware of the newer and additional vaccines and their importance in immunization schedule (presuming cost is not a limiting factor for them).

The findings of this study feels a need to create a common platform to update all our health professionals (including non-specialists, non-pediatrician specialists, AYUSH doctors) about the updated national immunization schedule as well as the additional/ optional vaccines available and evidence based practices. This platform may be provided with the support of Indian Academy of Pediatrics, Medical Council of India, and State Medical Councils.

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