

ORIGINAL RESEARCH

To study the Parental awareness of the Pneumococcal Conjugate Vaccine in the routine immunization program for the prevention of pneumococcal diseases

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ABSTRACT

Aim: To study the Parental awareness of the Pneumococcal Conjugate Vaccine in the routine immunization program for the prevention of pneumococcal diseases. **Materials and Methods:** This research used a semi-structured questionnaire that included both open-ended and closed-ended items. Prior to commencing data collection, informed permission for the research was obtained and validated. Information was gathered on socioeconomic and demographic factors. The parents were requested to provide information on the vaccination facility and the distance from their house in order to assess their knowledge of the available vaccination centers in their vicinity. The vaccination status with PCV was compared to the information on the immunization card. **Results:** A study was conducted with a total of 200 parents (either fathers or mothers). The study found no significant relationship between the parents' level of education and their awareness of PCV. However, the study did find a statistically significant association between parents' awareness of PCV and their children's eligibility for and possession of an immunization card. **Conclusion:** The current research has shown that parental knowledge of PCV in the regular immunization regimen has a significant impact on the vaccination status of their children. The provision of suitable programmatic assistance, widespread acceptance of vaccines, the presence and accessibility of vaccination centers all contribute positively to the immunization status of children.

Keywords: Pneumococcal Conjugate Vaccine, Immunization program, Pneumococcal diseases

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INTRODUCTION

Streptococcus pneumoniae is a significant contributor to community-acquired pneumonia, meningitis, and sepsis in children. It is also the primary cause of death from pneumonia globally.^{1,2} The PCV has significantly decreased the prevalence of invasive pneumococcal illness in children.³ In 2007, the World Health Organization advised that all nations involved should include the PCV in their national vaccination regimen.⁴ Notwithstanding this suggestion, several nations have yet to implement this vaccine, and little more than 50% of the global population has received complete vaccination with the PCV.⁵

Although the Indian Ministry of Health has made attempts to include all necessary pediatric vaccinations into the national immunization program, the PCV (Pneumococcal Conjugate Vaccine) has not yet been incorporated. As a result, it is not covered by either national health insurance or particular private

health insurance plans.⁶ Indian moms have sufficient knowledge, favorable attitudes, and good compliance rates about vaccinations included in the national immunization program.⁷ Less than 5% of senior Indians, who are considered to be another at-risk category, were observed to have awareness about pneumococcal illness and the need for a booster dosage at the age of 65.⁸

Constrained living space in slum housing leads to high population densities and unfavorable living circumstances, which in turn contribute to the rapid and extensive transmission of illnesses.⁹ Children living in economically disadvantaged regions have a significant burden of illness, and *Pneumococcus* has regularly been identified as a primary cause of severe pneumonia, invasive disease, and mortality in these children. The introduction of new vaccinations against pneumococcal pneumonia offers significant reassurance in our efforts to combat the impact of

pneumonia, a major contributor to mortality in children under the age of five globally.¹⁰

Various obstacles have been observed in various communities with regards to PCV immunization. These obstacles include a deficiency in understanding, limited interaction with the medical practitioner, exorbitant expenses associated with the PCV, and more factors. As far as we know, there have been no studies specifically examining the knowledge and attitudes of the Indian people on pneumococcal illness or the obstacles that may exist in relation to PCV vaccination.

MATERIALS AND METHODS

This research was done in the pediatrics department of a tertiary care hospital. It was a descriptive cross-sectional study. This research comprised a total of 200 babies and children, aged up to five years, who were receiving outpatient care in the department of paediatrics. Participants who were above the age of 5 and whose parents did not provide permission were excluded from the research.

METHODOLOGY

This research used a semi-structured questionnaire that included both open-ended and closed-ended items. Prior to commencing data collection, informed permission for the research was obtained and validated. Information was gathered on socioeconomic and demographic factors. The parents were requested to provide information on the vaccination facility and the distance from their house in order to assess their knowledge of the available vaccination centers in their vicinity. The vaccination status with PCV was compared to the information on the immunization card.

STATISTICAL ANALYSIS

The data was inputted into a pre-designed Microsoft Office Excel template and then imported into the statistical program known as Statistical Package for the Social Sciences (SPSS), version 25.0. The final dataset was analyzed using SPSS to conduct cross-tabulation and binary logistic regression. A Chi-square test with a significance threshold of $P < 0.05$ will be done to assess the correlation.

RESULTS

This research included a total of 200 parents, including both fathers and mothers. A sample of 100 respondents was recruited, with an equal number of participants chosen from two distinct regions. The majority of individuals accessible during the data collecting period were females, accounting for 85% of the sample, while men constituted just 15%. Additionally, 42% of the respondents were within the age range of 20-24 years. The number of family members was determined to be between 1 and 4 individuals, accounting for 55% of the total.

Over three-quarters of the participants (60%) had been living in the slums for a period exceeding three years. 35% of the dads and 40% of the mothers had achieved elementary education, namely completing classes 1-5. Approximately 35% of dads were employed as day laborers, whereas 55% of moms were identified as homemakers. 45% of the participants' household income was between the range of 10,001-15,000, while a portion of them (12%) claimed a household income over 15,000. A study was conducted with a total of 200 parents (either fathers or mothers). The study found no significant relationship between the parents' level of education and their awareness of PCV. However, the study did find a statistically significant association between parents' awareness of PCV and their children's eligibility for and possession of an immunization card.

Table 1: Association of parents' awareness of PCV by selected indicators

Characteristics	Urban=100		Rural		Total		P-Value
	Number	Percentage	Number	Percentage	Number	Percentage	
Aware of PCV (N=200)							
Yes	78	78	65	65	143	71.5	0.21
No	22	22	35	35	57	28.5	
Source of Information (N=70)	36		34				
Neighbours	1	2.78	3	8.82	4	5.71	0.32
Television	0	0	1	2.94	1	1.43	
Motivation by Health service providers	35	97.22	30	88.24	65	92.86	

Table 2: Awareness of benefits of PCV

Aware of Benefits in Introducing PCV (N=70)	Urban		Rural		Total		p-value
	Number	Percentage	Number	Percentage	Number	Percentage	
Vaccinate against pneumonia	29	80.56	26	76.47	55	78.57	0.11
Strengthen communication with health service providers	0	0	5	14.71	5	7.14	
Do not know	7	19.44	3	8.82	10	14.29	

Table 3: Eligibility and vaccination status of children

Eligible forPCV	Urban	Rural	Total		P-Value
Yes	85	95	180	90	0.56
No	15	5	20	10	
Vaccination status of PCV (N=180)					
Yes	80	70	150	83.33	0.54
No	18	12	30	16.67	
Eligible for PCV-2					
Yes	70	60	130	86.67	0.16
No	14	6	20	13.33	
Vaccination status ofPCV-2(N=130)					
Yes	57	58	115	88.46	0.26
No	7	8	15	11.54	
Eligible for PCV-3					
Yes	60	45	105	91.30	0.03
No	3	7	10	8.70	
Vaccination status of PCV-3(N=105)					
Yes	50	40	90	85.71	0.34
No	10	5	15	14.29	

Table 4: Comparison between awareness of PCV and vaccination status

Parameter	Aware of PCV Total			P-value
	Yes's	No	Total	
Vaccination status of PCV-1 (N=180)				
Yes	72	88	160	0.07
No	0	20	20	
Vaccination status of PCV-2 (N=130)				
Yes	45	55	100	0.001
No	0.0	30	30	
Vaccination status of PCV-3 (N=105)				
Yes	35	40	75	0.03
No	8	22	30	

DISCUSSION

This research illustrates the impact of parental knowledge of the Pneumococcal Conjugate Vaccine (PCV) on the vaccination status of their children in regular immunization programs. Therefore, we recorded many problems that clearly showed the connection between parents' knowledge of PCV and the vaccination status of children with PCV. Only 71.5% of the respondents demonstrated knowledge of PCV, and a substantial proportion (65%) did not provide information on their children's vaccination status with PCV. This research found that a significant proportion of parents, who lack formal education and have a poor socioeconomic position, are knowledgeable of PCV based on information provided by health care providers. They have convenient access to vaccination services right at their homes, mostly given by the anganwadi personnel. This research discovered a significant correlation between parental knowledge of PCV and the vaccination status of children who received PCV, as shown by the immunization card. For PCV-1 and PCV-2, conscientious parents ensured that their children were vaccinated as soon as they were eligible

based on their age. Although parents were aware of PCV, a small percentage (14.29%) chose not to vaccinate their children with PCV-3 owing to the child's illness or other household priorities. The third dosage of PCV was noticeably delayed in comparison to the preceding two doses. Furthermore, the mother lacked awareness about the vaccination schedule and the appropriate quantity of doses. The study's results revealed that a significant proportion of respondents did not provide information on their children's vaccination status with PCV. This indicates a lack of understanding of the vaccination schedule. In India, a survey revealed that about 36% of mothers were knowledgeable with the recently introduced pentavalent vaccination. Furthermore, only 6% of moms were able to recall the specific illnesses that this vaccine helps against.¹¹ The research findings indicate that a significant proportion of parents who lack formal education and have a poor socioeconomic position are knowledgeable of PCV, as informed by health care providers. They have convenient access to vaccination services right at their homes, mostly supplied via the EPI outreach facility. These results differ from the conclusions of previous research done

in India, Nepal, and Uganda. Those studies concluded that education and socioeconomic position were important factors in predicting vaccination status, irrespective of other variables.¹²⁻¹⁵ The lack of education among mothers in Pakistan has been noted as a significant obstacle to the effectiveness of the vaccination program.¹⁶ Furthermore, the results from Sri Lanka indicate that the level of understanding that mothers have about immunization directly affects the vaccination status of their children. These findings align with the conclusions found in the current research.¹⁷ A research on interventions shown that enhanced social mobilization efforts contribute to the advancement of immunization rates in Bangladesh, irrespective of the parents' educational or occupational background.¹⁸ Previous research has revealed that a lack of in-depth understanding of the schedule and insufficient recognition of the appropriate motivation among the target population resulted in a significant number of children being only partially immunized, despite the majority of the population acknowledging the significance of immunization.¹⁹

Thus, more inquiry is necessary to understand the underlying causes, particularly in impoverished communities where moms have less knowledge about certain vaccinations and preventable illnesses. It is imperative that we determine the means by which we may effectively reach out to these individuals who have discontinued vaccination. The health care professionals gained community confidence and successfully mobilized the population, resulting in a high demand for vaccination services. The community quickly adjusted to the new vaccine schedule. Furthermore, this survey reveals that 85.71% of respondents who were aware of PCV identified health care providers as their primary source of knowledge. The key factors influencing the uptake of PCV in this community were found to be awareness of PCV, limited understanding of the illnesses that may be prevented by PCV, knowledge of the benefits and potential adverse effects of the vaccine, and work-related obstacles preventing parents from bringing their kid for vaccination. Healthcare practitioners should use novel strategies, such as using visual educational interventions, to effectively communicate information about the vaccine, including its advantages and accurately advise on potential adverse effects, to parents. This strategy has the potential to decrease the incidence of parents discontinuing immunization. This research discovered that being knowledgeable about a certain vaccine has an impact on the individual's vaccination status, and this finding may also be relevant to other vaccinations.

CONCLUSION

The current research has shown that parental knowledge of PCV in the regular immunization regimen has a significant impact on the vaccination status of their children. The provision of suitable programmatic assistance, widespread acceptance of

vaccines, the presence and accessibility of vaccination centers all contribute positively to the immunization status of children. Improving the key messages given by health care providers and using new methods to administer PCV, such as spreading information about its advantages and providing sufficient advice on potential side effects to parents, may help decrease dropout rates.

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