



## Knowledge and Perception of Interns Regarding Pneumococcal Conjugated Vaccine in a Private Medical College - A Cross-Sectional Study

Dr. D. Suganya 1\*, Dr. K. R. Pandiyan 2, Dr. T. T. Gopinath 3, Dr. V.C. Punitha 4, Dr. K. Shankar 5, Dr. J. Susmitha 6, Dr. A. S. Nizamudeen 7, Dr. N.S. Gowtham 8.

1 Postgraduate \*, 2 Professor, 3 Associate Professor, 4 Epidemiologist, 5 Professor & HOD, 6,7,8 Postgraduates

Department of Community Medicine Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram. Meenakshi Academy of Higher Education & Research (MAHER), Chennai.

\*Correspondence: Dr. D.Suganya, Postgraduate, Department of Community Medicine Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram Meenakshi Academy of Higher Education & Research (MAHER), Chennai.

*(Received: 16 January 2024*

*Revised: 20 February 2024*

*Accepted: 20 March 2025)*

### KEYWORDS

Pneumococcal  
Conjugate Vaccine  
(PCV), Medical Interns,  
Vaccine Awareness,  
Vaccination Advocacy,  
Immunization  
Knowledge

### ABSTRACT:

**Introduction:** Pneumonia is severe respiratory infection that is still a leading cause of death in children, particularly under five years of age. This contributes approximately 800,000 deaths globally in 2018 and in this majority of them occurs in low- and middle-income countries. This accounts an estimated 14% of all deaths in children aged 1–59 months in India as of 2015. These morbidity and mortality can be prevented through prompt administration of the pneumococcal conjugate vaccine (PCV), which provides protection against invasive pneumococcal diseases (IPD), including bacteraemia and meningitis, in addition to pneumonia. **Aims and goal:** To assess the knowledge and perception about pneumococcal conjugate vaccine among interns of a private medical college.

**Methodology:** This cross-sectional study was conducted at a private medical college, involving 147 interns selected through convenience sampling and data were collected using a pretested questionnaire. Data were collected and entered MS Excel and analysed using SPSS version 23 for descriptive analysis.

**Results:** Among the 147 interns, 82 (56%) were female, and 65 (44%) were male. Only 41% showed good knowledge about PCV, with key areas of deficiency including awareness of the vaccination schedule and its role in immunocompromised children. 47% of the interns exhibited a positive perception of PCV, as evidenced by their agreement with statements supporting vaccine promotion and accessibility.

**Conclusion:** Increasing awareness and adequate knowledge will help us to promote a cheerful outlook towards PCV, and this will enable future healthcare providers to effectively educate parents and communities, thereby improving vaccination rates and reducing pneumonia-related mortality.



## Introduction

Pneumonia is severe respiratory infection that is still a leading cause of death in children, particularly under five years of age. This contributes approximately 800,000 deaths globally in 2018<sup>1</sup> and in this majority of them occurs in low- and middle-income countries. This situation is due to barriers to preventive healthcare, due to gaps in knowledge of health care workers and vaccination coverage. Pneumococcal infections are caused by *Streptococcus pneumoniae*, which is a primary causative organism that causes pneumonia-related deaths. This accounts an estimated 14% of all deaths in children aged 1–59 months in India as of 2015<sup>2,3</sup>. These morbidity and mortality can be prevented through timely administration of the pneumococcal conjugate vaccine (PCV), which provides protection against invasive pneumococcal diseases (IPD), including bacteraemia and meningitis, in addition to pneumonia<sup>4-6</sup>.

Despite the vaccine's efficacy, the acceptance for PCV in India is facing challenges due to limited awareness among healthcare providers and inadequate knowledge among communities, vaccine accessibility, and affordability<sup>7</sup>. Adequate coverage and acceptance of the vaccination programs is completely dependent on the role of healthcare professionals, including medical interns, who are future doctors, and they are expected to interact with patients and their families. They serve as a vital link in educating parents about the importance of vaccination, addressing concerns, and improving compliance.

This study was conducted to assess the knowledge and perception of medical interns regarding PCV at a private medical college. By finding gaps in awareness and perception, this research aims to inform strategies for improving education and training among future healthcare providers, ultimately enhancing vaccine advocacy and coverage.

## Aims and goal:

Assess the knowledge and perception about pneumococcal conjugate vaccine among interns of a private medical college.

## Methodology

This cross-sectional study was conducted at a private medical college, involving 147 interns selected through convenience sampling. Data were collected using a pretested questionnaire on knowledge and perception regarding PCV, distributed via Google Forms. The questionnaire included sections on awareness, benefits, and accessibility of PCV. Data were collected and entered MS Excel and analysed using SPSS version 23 for descriptive analysis.

## Results

Among the 147 interns, 82 (56%) were female, and 65 (44%) were male. Only 41% showed good knowledge about PCV, with key areas of deficiency including awareness of the vaccination schedule and its role in immunocompromised children. Only 14.3% of the interns were able to mention the correct age group to receive PCV. 49% of the interns had adequate knowledge about the dose, route and site of PCV administration in our study group as shown in Figure 1. 47% of the interns exhibited a positive perception of PCV, as evidenced by their agreement with statements supporting vaccine promotion and accessibility. Surprisingly 6% of the intern's perception towards PCV is inadequate in case of effectiveness of the vaccine, benefits that outweighed the risks and about recommendation of the vaccine to children as shown in Figure 2.

Figure 1: Knowledge regarding PCV.

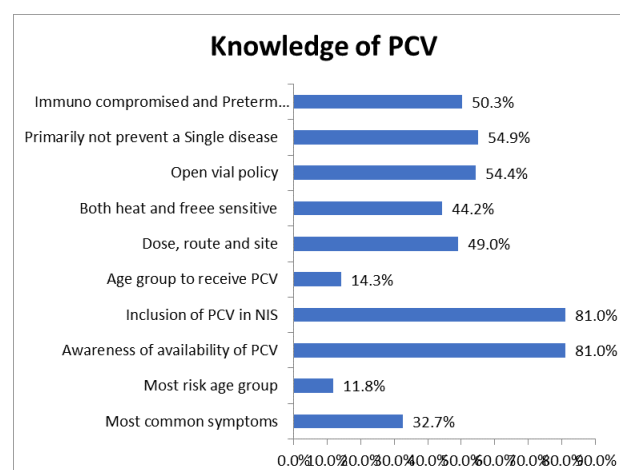
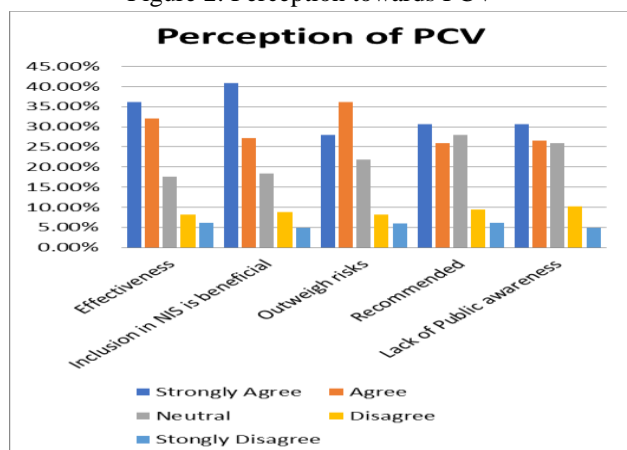




Figure 2: Perception towards PCV



## Discussion

In our study we have seen some critical gaps in the knowledge and perception of pneumococcal conjugate vaccine (PCV) among medical interns. Among 147 participants, only 41% had adequate knowledge and understanding of PCV, and 47% expressed a cheerful outlook towards it. We have also seen that only 14.3% had adequate knowledge about the age group for PCV administration, and only 49% were aware of the right dose, route, and site of administration. Surprisingly 6% of interns doubted the vaccine's effectiveness and benefits, highlighting areas for improvement in both education and awareness.

Shawqi et al.<sup>8</sup> found that only 43% of Egyptian medical students and interns had moderate knowledge about healthcare worker-recommended vaccines, with many misconceptions about vaccine safety. Similarly, in our study, less than half of the interns had adequate PCV knowledge, underlining the need for more structured educational efforts. On a positive note, your study found that only 6% doubted PCV effectiveness, which is an improvement over the findings by Kaddour et al.<sup>9</sup> where 20.2% of their participants had doubt about vaccine efficacy which may lead to low influenza vaccination acceptance.

Giustolisi et al.<sup>10</sup> observed that there is a medium to high vaccine hesitancy in medical students, which may be due to inadequate knowledge and a similar observation was made in our study. In Ghana, Doe et al.<sup>11</sup> observed that only 4% of health care providers were

aware of PCV. Fatimah et al.<sup>12</sup> findings were similar to our study, that without a clear understanding of the vaccine's schedule and administration, interns may struggle to confidently promote PCV to patients and caregivers. These insights emphasize the need for targeted training and resources to empower interns to bridge these gaps.

## Conclusion

This study insists the need to strengthen the knowledge and perception of PCV among medical interns. Increasing awareness and adequate knowledge will help us to promote a cheerful outlook towards PCV, and this will enable future healthcare providers to effectively educate parents and communities, thereby improving vaccination rates and reducing pneumonia-related mortality.

## Conflict of Interest

The author has no conflict of interest.

## References

1. UNICEF. (2020). Pneumonia in children's statistics. Retrieved from <https://data.unicef.org/topic/child-health/pneumonia/>
2. Wahl, B., O'Brien, K. L., Greenbaum, A., Majumder, A., Liu, L., Chu, Y., ... & Gessner, B. D. (2020). Burden of Streptococcus pneumoniae and Haemophilus influenzae type b disease in children in the era of conjugate vaccines: global, regional, and national estimates for 2000–2015. *Lancet Global Health*, 6(7), e744–e757. [https://doi.org/10.1016/S2214-109X\(18\)30247-X](https://doi.org/10.1016/S2214-109X(18)30247-X)
3. O'Brien, K. L., Wolfson, L. J., Watt, J. P., Henkle, E., Deloria-Knoll, M., McCall, N., ... & Feikin, D. R. (2019). Burden of disease caused by Streptococcus pneumoniae in children younger than 5 years: global estimates. *Lancet*, 374(9693), 893–902. [https://doi.org/10.1016/S0140-6736\(09\)61204-6](https://doi.org/10.1016/S0140-6736(09)61204-6)



4. Klugman, K. P., & Black, S. (2018). Impact of pneumococcal conjugate vaccines on pneumonia and meningitis in Africa. *Human Vaccines & Immunotherapeutics*, 14(6), 1236-1244.  
<https://doi.org/10.1080/21645515.2018.1443169>
5. Pneumonia & Diarrhea Progress Report. (2020). John Hopkins and IVAC. Retrieved from <https://www.jhsph.edu>
6. Gavi, the Vaccine Alliance. (2020). The impact of PCV introduction on childhood mortality. Retrieved from <https://www.gavi.org>
7. Ministry of Health and Family Welfare, Government of India. (2020). National Immunization Schedule. Retrieved from <https://www.mohfw.gov.in/>
8. Mohamed Shawqi, M., El-Said, Y.M., Behery, M.B. et al. Knowledge, attitude, and practice of Egyptian medical students towards healthcare workers' recommended vaccines: a nationwide cross-sectional survey. *BMC Med Educ* 24, 876 (2024).  
<https://doi.org/10.1186/s12909-024-05712-8>
9. Kaddour, O., Ben Mabrouk, A., Arfa, S., Lassoued, N., Berriche, O., & Chelli, J. (2024). Knowledge and attitudes of healthcare workers about influenza vaccination. *Infection, disease & health*, 29(4), 203–211.  
<https://doi.org/10.1016/j.idh.2024.04.005>
10. Giustolisi, F., Modica Fiascaro, A., Palella, M., Oliveri Conti, G., Ferrante, M., & Fiore, M. (2023). Medical students' vaccine hesitancy, knowledge and attitudes: A cross-sectional study. *The European Journal of Public Health*, 33(Suppl 2), ckad160.1437.  
<https://doi.org/10.1093/eurpub/ckad160.1437>
11. Doe, E., Nguah, S. B., Mensah, K. B., & Buabeng, K. O. (2023). Caregivers' knowledge, attitude, and perception toward pneumococcal infection prophylaxis in pediatric sickle cell disease patients in Kumasi, Ghana. *Health science reports*, 6(11), e1665.  
<https://doi.org/10.1002/hsr2.1665>
12. Fatimah, H., Diauddin, Jayadi, Y. D., Aflanie, I., Bakhriansyah, M., Istiana, Rahman, F., & Anhar, V. Y. (2023). A cross-sectional study: knowledge and attitude toward participation in the covid-19 vaccination program among medical students. *Journal of Public health research and Community health development*, 7(1), 1-5.  
<https://doi.org/10.20473/jphrecode.v7i1.29536>