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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PNEUMOCOCCAL CONJUGATE VACCINATION AMONG MOTHERS OF UNDER-FIVE CHILDREN AT RADHAPURAM, VILLUPURAM DISTRICT

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ABSTRACT

This pre-experimental study employed a one-group pretest-posttest design to evaluate structured teaching programme (STP) effectiveness among 50 mothers of under-five children in Radhapuram, Villupuram district. A validated 30-item MCQ tool assessed knowledge across five domains, scored as inadequate (0-10), moderate (11-20), adequate (21-30). STP comprised a 45-minute module using flashcards, videos, and demonstrations.Pretest revealed inadequate knowledge in 37 (74%), moderate in 13 (26%), mean 8.06±4.01. Posttest shifted to adequate 35 (70%), moderate 15 (30%), mean 23.16±4.88; paired $t=18.55$, $df=49$, $p<0.001$.Chi-square showed no posttest associations with demographics (age $\chi^2=5.38$, $p=0.50$; education $\chi^2=4.16$, $p=0.66$; vaccine status $\chi^2=5.53$, $p=0.63$).

Keywords: Pneumococcal conjugate vaccine, structured teaching programme, maternal knowledge, under-five children, rural health education, UIP Tamil Nadu

INTRODUCTION

Background

Vaccination constitutes the cornerstone of preventive healthcare, saving 3.5-5 million lives annually per WHO estimates. Among vaccine-preventable diseases, pneumococcal infections caused by Streptococcus pneumoniae rank prominently, manifesting as pneumonia (single largest infectious child killer, 740,180 under-five deaths in 2019), meningitis, sepsis, otitis media, and sinusitis. Globally, pneumococcus claims over 300,000 under-five lives yearly, with 33% of pneumonia deaths and 18% of severe cases attributable to this bacterium.

India bears disproportionate burden: 3.6 million severe pneumonia episodes and 0.35 million deaths in under-fives (2010 estimates), translating to 4.8/1000 annual severe pneumococcal pneumonia incidence. Tamil Nadu introduced PCV13 into UIP in 2021, benefiting 923,000 children annually, yet rural uptake lags due to awareness deficits—66% mothers in this study reported no prior information.

PCV differs fundamentally from polysaccharide vaccines by conjugating pneumococcal capsular polysaccharides to carrier proteins, eliciting T-cell dependent responses for robust, long-lasting immunity in infants. PCV13 targets 13 prevalent serotypes (1, 4, 5, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F, 6A, 3), administered at 6, 10, 14 weeks with booster at 9-12 months. Side effects remain mild (fever, injection site tenderness), contrasting life-threatening disease risks.

Significance

Enhancing maternal PCV knowledge promotes herd immunity, reduces antimicrobial resistance, and aligns with Sustainable Development Goal 3. Nurse-led STP leverages community trust, offering scalable model for India's 25 million annual under-five births

REVIEW OF LITERATURE

Global Evidence

Pomat et al. (2019) demonstrated PCV10/13 safety and immunogenicity in 262 high-risk infants: 80% achieved IgG ≥0.35 µg/mL post-third dose, sustained at 6 months in 75%; carriage reduced without serious adverse events. Dayie (2019) found 54% carriage prevalence in Ghanaian under-fives post-PCV13, with penicillin non-susceptibility dropping from 45% to 22.3%, affirming vaccine impact.

Ngocho et al. (2019) meta-analysis across Africa reported 31.7-80.1% invasive pneumococcal disease decline post-PCV, highest (55-89%) in <24-month-olds, though serotypes 1,5,19A emerged. Marra & Vadlamudi (2019) confirmed PCV13 superiority over PPSV23 in adults for immunogenicity and community-acquired pneumonia prevention (CAPiTA trial). Chen et al. (2019) estimated global PCV13 prevents 399,000 child deaths yearly at cost-effectiveness across UN regions.

MATERIALS AND METHODS

Research Design

Pre-experimental, one-group pretest-posttest approach minimized confounding while establishing causality via repeated measures.

Setting

Radhapuram, Villupuram district (population 56,000; rural, 68% joint families, agriculture-based economy). Selected for high under-five population and low PCV.

Population and Sample

Target: Mothers of under-five children residing ≥1 year in Radhapuram.
Sample: 50 via convenience sampling (response rate 100%).
Section A: Demographic proforma (9 items: age, education, occupation, family income, children number/age, religion, family type, info source, vaccine status).
Section B: 30-item structured knowledge questionnaire

ANALYSIS AND RESULTS

Pre-Post Knowledge Distribution.
Pretest: Inadequate 74% (n=37), moderate 26% (n=13), adequate 0%.
Posttest: Adequate 70% (n=35), moderate 30% (n=15), inadequate 0%.

Domain (Max=6)	Pretest (Mean±SD)	Posttest (Mean±SD)	Paired t	p-value
Causes	1.4±0.9	4.6±0.7	19.2	<0.001
Prevention	1.2±0.8	4.8±0.6	22.1	<0.001
PCV details	1.6±1.0	4.7±0.7	18.9	<0.001
Side-effects	1.5±0.9	4.5±0.8	17.8	<0.001
UIP schedule	2.4±1.1	4.5±0.9	12.6	<0.001

Domain (Max=6)	Pretest (Mean±SD)	Posttest (Mean±SD)	Paired t	p-value
Total	**8.06±4.01**	**23.16±4.88**	**18.55**	**<0.001**

Association on Knowledge vs Demographic Variables

Variable	χ^2	df	p-value
Age	5.38	6	0.50
Education	4.16	6	0.66
Occupation	3.92	4	0.42
No. children	2.87	4	0.58
Child age	4.21	4	0.38
Income	3.15	4	0.53
Religion	-	-	1.00
Family type	1.23	2	0.54
Info source	2.98	4	0.56
Vaccine status	5.53	2	0.63

No significant associations (all p>0.05), indicating STP efficacy across subgroups.

DISCUSSION

The pre test mean value is 8.06 with the standard deviation of 4.01 and the post test mean value of 23.16 with the standard deviation of 4.88 and „t" test value is 18.55, it is significant at p value < 0.05. it indicates that there is significant difference between pre test and post test level of knowledge among mothers of under five children. Hence the knowledge level was improved after the structured teaching programme was improved

CONCLUSION

The finding shows that pre test mean value is 8.06 with the standard deviation of 4.01 and the post test mean value of 23.16 with the standard deviation of 4.88 and t- test value is 18.55, it is significant at p value < 0.05. It indicates that there is significant difference between pre test and post test level of knowledge among mothers of under five children. The study concluded that structured teaching programme is effective in improving knowledge among mothers of under five children regarding pneumococcal conjugate vaccine.

REFERENCES:

1. Park K. Preventive and Social Medicine. 21st ed. Jabalpur: Banarsidas Bhanot; 2009. p.262.
2. WHO. Pneumococcal Vaccines WHO Position Paper. Wkly Epidemiol Rec. 2019;94(14):169-92.
3. Pomat WS, van den Biggelaar AHJ, et al. Safety and immunogenicity of pneumococcal conjugate vaccines in high-risk population. Vaccine. 2019;37(38):5682-91.
4. Dayie NTKD. Pneumococcal carriage among children under five in Accra, Ghana. PLoS One. 2019;14(7):e0218817.
5. Ngocho JS, Solomi GA, et al. Effectiveness of PCV against IPD in Africa. BMC Pediatr. 2019;19:410.
6. Marra F, Vadlamudi NK. Efficacy/safety PCV13 in adults. Hum Vaccin Immunother. 2019;15(3):693-708.
7. Chen C, Cervero-Liceras FJ, et al. Effect/cost-effectiveness PCV. Lancet Glob Health. 2019;7(2):e239-46.
8. Sharmin KL, Hossain MT, Sarma H. Awareness PCV Bangladesh. Hum Vaccin Immunother. 2019;15(9):2175-82.
9. Linus SL, Laikha NZ, et al. Parents' knowledge PCV Malaysia. PLoS One. 2019;14(9):e0223075.
10. AL-Lede MM, Khanfar AS, et al. Parents' attitude PCV Jordan. Vaccine. 2021;39(20):2727-34.
11. Manna N, Das S, et al. Parental knowledge PCV Kolkata. J Family Med Prim Care. 2022;11(6):2894-900.
12. Ananthanarayan R, Paniker CKJ. Textbook of Microbiology. 7th ed. Hyderabad: Universities Press; 2005.
13. Baveja CP. Textbook of Microbiology. 3rd ed. New Delhi: Arya Medi; 2005.
14. Gupte S. Differential Diagnosis in Pediatrics. 2nd ed. New Delhi: Jaypee; 2002.
15. CDC. Pneumococcal Vaccination. Atlanta: CDC; 2023.
16. Tamil Nadu Health Department. UIP Progress Report 2021-25. Chennai: TN Govt; 2025.
17. Rudan I, et al. Global burden pneumococcal disease. Lancet. 2010;375(9721):1192-9.
18. Watt JP, et al. Global pneumococcal disease burden. Lancet. 2009;374(9693):893-902.
19. O'Brien KL, Wolfson LJ, et al. Burden pneumococcal disease. Lancet. 2009;374(9693):826-36.
20. Madhi SA, et al. PCV impact South Africa. N Engl J Med. 2020;382(20):1820-30.
21. Moore MR, et al. PCV13 impact USA. Clin Infect Dis. 2015;61(9):1390-402.
22. Pilishvili T, et al. PCV13 effectiveness. MMWR. 2014;63(27):610-3.
23. Ladhani SN, et al. PCV13 impact UK IPD. Lancet Infect Dis. 2018;18(2):182-91.
24. von Mollendorf C, et al. PCV impact South Africa. Clin Infect Dis. 2019;69(10):1692-9.
25. Cohen R, et al. PCV13 acute otitis media. JAMA Pediatr. 2017;171(1):27-33