

**TITLE:** RISK FACTORS ASSOCIATED WITH *STREPTOCOCCUS PNEUMONIAE* CARRIAGE AMONG CHILDREN AFTER LONG-TERM VACCINATION WITH PNEUMOCOCCAL CONJUGATE VACCINES IN NITERÓI/RJ

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**ABSTRACT:**

Pneumococcal diseases are one of the main causes of death in children under 5 years of age, especially in lower income countries. Although Brazil is currently classified as an upper-middle-income country, inequality still persists. In 2010, the 10-valent (PCV10, free of charge) and the 13-valent (PCV13, out-of-pocket payment) pneumococcal conjugate vaccines (PCVs) were introduced in Brazil for childhood immunization. Nasopharyngeal carriage is a key factor for the development of infection and the spreading of this microorganism. We aimed to evaluate the association between pneumococcal carriage and clinical, demographic and socioeconomic factors among children in Niterói/RJ, after 9 years of the PCV10/13 introduction in Brazil. Between September-December 2019, we conducted a cross-sectional study and recruited 455 children aged < 6 years old to investigate carriage with *S. pneumoniae*. From each child, we collected a single nasopharyngeal swab. Specimens were subjected to a broth enrichment step, followed by culture on sheep blood agar. Species were identified by colony morphology, optochin sensitivity and bile-solubility test. Statistical analyses involved Fisher's exact test ( $\alpha=0.05$ ) and Odds Ratios calculation. The carriage prevalence was 17.4% (79 children). We found significant association between carriage and the following factors: age  $\geq 2$  years ( $p<0.01$ , OR=2.11); coryza/sneezing ( $p<0.01$ , OR=2.39); cough/expectoration ( $p=0.0193$ , OR=2.01); rhinitis ( $p<0.01$ , OR=4.52); non-white ethnicity ( $p=0.0445$ , OR=1.71); childcare center attendance ( $p=0.009$ , OR=2.03); slum residence ( $p<0.01$ , OR=2.03); cohabitation with siblings aged < 6 years ( $p=0.0295$ , OR=1.80); lack of stable income ( $p<0.01$ , OR=2.00) and *per capita* household income  $\leq$  R\$ 1,000.00 ( $p=0.04$ , OR=2.14). Among the analyzed population, the presence of respiratory symptoms, crowding-associated factors, being non-white and lower socioeconomic status were strongly associated with pneumococcal carriage.

**Keywords:** *Streptococcus pneumoniae*, carriage, clinic, demographic, socioeconomic status.

**Development Agencies:** PROPPi/UFF, FAPERJ, CAPES, and CNPq,