

Nasal colonisation of *Staphylococcus aureus* and *Streptococcus pneumoniae* in preschool children attending selected immunisation clinics, Kandy, Sri Lanka

HMNP Handapangoda¹, LPALP Ruwansiri¹, UPRU Dissanayake¹,
ST Kudagammana², BN Dissanayake¹, LVC Liyanapathirana¹

Introduction and Objectives: *Staphylococcus aureus* colonisation is quite prevalent among Sri Lankan children. Pneumococcal carriage is a prerequisite for pneumococcal disease. Since preschool children are very likely to transmit pathogens to others, identification of pneumococcal and *S. aureus* colonisation rates has significant importance. The objectives of this study were to examine the prevalence, and the factors associated with nasal carriage of *S. aureus* and *S. pneumoniae* in preschool children.

Methods: Both anterior nasal swabs and nasopharyngeal swabs (NPS) were collected from 375 children between 2 to 5 years attending immunisation clinics at Teaching Hospital, Peradeniya and Yatinuwara MOH area during June 2023 - January 2024. Nasal swabs were enriched in 6.5% NaCl and NPS were stored at -80 °C. *S. aureus* and *S. pneumoniae* were isolated using conventional microbiological testing. Interviewer administered questionnaires were used to collect data. Data were analysed using SPSS version 25.0.

Results: The study group had a median age of 54 months (IQR: 36-60), with 188 (50.1%) males and 187 (49.9%) females. Among 375 participants, prevalence of *S. aureus* colonisation was 26.9% (n=101) and *S. pneumoniae* colonisation was 19.5% (n=73). Of these, 21(5.6%) were co-colonised with both *S. aureus* and *S. pneumoniae* while 52 (13.9%) carried only *S. pneumoniae* and 80 (21.3%) carried only *S. aureus*. Kindergarten attendance (OR=1.92, 95% CI=1.13-3.27), smokers at home (OR=1.85, 95% CI=1.04-3.30), having recent upper respiratory tract infections – (URTI) (OR=16.39, 95% CI=2.23-120.47), family members with URTI (OR=1.83, 95% CI=1.09-3.08) were significantly associated with pneumococcal colonisation. No significant associations were found with *S. aureus* colonisation. Age (p=0.017), weight (p=0.021), kindergarten attendance (OR=4.016, 95% CI=1.33-12.18) were significantly associated with *S. aureus* and pneumococcal co-colonisation. No significant association was found between *S. aureus* and pneumococci colonisation (p=0.694).

Conclusions: *S. aureus* and *S. pneumoniae* colonisation rates were considerably high among children aged between 2 to 5 years in the selected population. Kindergarten attendance was a significantly associated factor for co-colonisation of *S. aureus* and *S. pneumoniae* along with age and weight.

Keywords: *S. aureus*, *S. pneumoniae*, colonisation, co-colonisation, kindergarten aged children

Acknowledgement: International Society of Antimicrobial Chemotherapy (ISAC) is acknowledged for funding via a Project Grant (PI – Prof Margaret Ip).

¹Department of Microbiology, Faculty of Medicine, University of Peradeniya, Sri Lanka

²Department of Paediatrics, Faculty of Medicine, University of Peradeniya, Sri Lanka

Address for correspondence: Prof Veranja Liyanapathirana, Department of Microbiology, Faculty of Medicine, University of Peradeniya, Sri Lanka; Telephone: 0777060887;

Email: veranja.liyanapathirana@med.pdn.ac.lk  <https://orcid.org/0000-0002-4356-2172>