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Nasal colonization and antimicrobial susceptibility pattern of *Staphylococcus aureus* among pre-school children in Ethiopia

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Background: *Staphylococcus aureus* is one of the bacterium that can asymptomatically colonize the human upper respiratory tract (i.e. nose and throat). Carriage of *S. aureus*, including methicillin resistant *Staphylococcus aureus*, is common to children.

Objective: The aim at this study was to determine the nasal colonization, associated factors and antimicrobial susceptibility patterns of *Staphylococcus aureus* isolates among pre-school children in Debre Markos town.

Methodology: Institutional-based cross sectional study was conducted. A total of 400 nasal swabs were collected from pre-school children from April to June, 2015 following standard microbiological methods. MRSA was detected using both cefoxitin (30 µg) and oxacillin (6 µg) discs in combination and associated factors were assessed using self-administered pretested questionnaires, which were delivered to the children's parents/guardians. Statistical analysis of the data (logistic regression) was done using SPSS V-22.

Results: A total of 52 *Staphylococcus aureus* isolate was recovered from 400 nasal swap samples. The prevalence of S. aureus among pre-school children was 13% (52/400). The susceptibility patterns of the isolates to commonly used antibiotics were: 84.62% to chloramphenicol, 69.2% to doxycycline and tetracycline, 92.3% to kanamycin, 7.7% to ampicillin and penicillin, 86.6% to ceftriaxone, and 76.9% to augmentin. All the isolates were sensitive to oxacillin and cefoxitin; there was no methicillin resistant *Staphylococcus aureus* isolate, and also sensitive to gentamycin, erythromycin and clindamycin. The main associated factors of nasal colonization of S. *aureus* in the study area was having recurrent acute otitis media [AOR=2.37(1.11, 5.06)], children admission in hospital [AOR=1.96(1.03, 3.73)] and cough [AOR=2.09(1.08, 4.09)].

Conclusion & Recommendation: The prevalence of S. *aureus* nasal colonization among pre-school children was relatively low and there was no MRSA isolate. Factors like; recurrent acute otitis media, hospital admission and cough were significantly associated with S. *aureus* nasal colonization. Most of the isolates were resistant to β-lactam drugs and sensitive to drugs like gentamycin, erythromycin, clindamycin, chloramphenicol, doxycycline, tetracycline, kanamycin and augmentin. Hence, the isolates in the community may disseminate to the hospital environment, we should not give β-lactam drugs unless we perform antimicrobial susceptibility test for treatment of any infection caused by S. *aureus*.

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