

Nasal Carriage Rate, Antimicrobial Susceptibility Pattern and Associated Factors of *Staphylococcus aureus* with Special Emphasis on MRSA among Urban and Rural Elementary School Children in Gondar; Northwest Ethiopia; A comparative cross-sectional study



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Abstract

Introduction: *Staphylococcus aureus* is a Gram positive, catalase positive and coagulase positive bacterial species commonly found on the skin and in the nose of most healthy individuals. The anterior nares of nose are the most frequent carriage sites for *S. aureus* in both adults and children. Methicillin resistance among *S. aureus* isolates has steadily increased worldwide.

Objective: The main objective of this study was to determine nasal carriage rate, antimicrobial susceptibility pattern and associated risk factors of *Staphylococcus aureus* with special emphasis on MRSA among urban and rural elementary school children in Gondar, Northwest Ethiopia.

Method: A community based comparative cross sectional study was conducted on 622 urban and rural elementary school children in Gondar from January 1st to March 30th, 2018. Data was collected using a questionnaire and nasal swab samples were collected by sterile cotton tip swab moistened with sterile normal saline. Collected samples were inoculated on mannitol salt agar and incubated aerobically at 37°C for 24hrs. *S. aureus* was confirmed by observing colony characteristics and biochemical tests. MRSA was detected using cefoxitin disc by Modified Kirby Bauer disk diffusion technique. Finally data was entered, cleared and checked using Epi-info version 7 and exported to SPSS version 20 for analysis. Odds ratio and logistic regression were used for statistical association. P-value < 0.05 at 95% CI was considered for statistical association.

Results: Of the 622 school children, the overall prevalence of *S. aureus* was 23% (143/622). Of them, 9.79% (14/143) were MRSA. The carriage rate in urban schools was 13.3% (83/622) whereas it was 9.6% (60/622) in rural schools. The prevalence of MRSA among urban schools, 9.1% were higher than their urban counterparts, 0.7%. Gentamycin, clindamycin and ciprofloxacin were the most effective whereas penicillin and tetracycline were resistant. Children's fathers' educational status and number of children in class room were significantly associated with *S. aureus* but only living in urban of children significantly associated with MRSA.

Conclusion: This study showed high prevalence of *S. aureus* and MRSA, 23% (143/622) and 9.79% (14/143) respectively. So, decolonization of nasal carriers of MRSA and reducing the number of students per classroom should be addressed. Moreover, regular large scale survey should be conducted to assess the burden and intervene accordingly.



Biography

Abiye Tigabu currently works at the Department of Medical Microbiology, University of Gondar. Abiye does research in Virology, Mycology and Bacteriology. Their current project is 'Prevalence of MRSA in community'.

[4th International Conference on Proteomics, Genomics and Molecular Medicine](#) | Zurich, Switzerland | Oct 27-28, 2021

Citation: Abiye Tigabu, Nasal Carriage Rate, Antimicrobial Susceptibility Pattern and Associated Factors of *Staphylococcus aureus* with Special Emphasis on MRSA among Urban and Rural Elementary School Children in Gondar; Northwest Ethiopia; A comparative cross-sectional study, 4th International Conference on Proteomics, Genomics and Molecular Medicine, Zurich, Switzerland, Oct 27-28, 2021