



Prevalence of Nasal Carriage of *Staphylococcus aureus* among Medical and Veterinary Students

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**A thesis submitted in partial fulfillment of the requirements for the degree of Master in
Public Health**

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December 2022

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List of abbreviation Abbreviations	Elaborations
%	Percentage
\geq	Greater than or equal to
\leq	Less than or equal to
95% CI	95% confidence interval
AMR	Antimicrobial resistance
BA	Blood agar
CVASU	Chattogram Veterinary and Animal Sciences University
MRSA	Methicillin resistant <i>Staphylococcus aureus</i>
MSA	Mannitol salt agar
PCR	Polymerase chain reaction
IAHS	Institute of applied health science

Abstract:

Staphylococcus aureus is one of the main causes of hospital and community acquired infections. The nose is the main ecological niche where *S. aureus* resides, and nasal carriage among hospital personnel is one of the important sources of staphylococci for causing nosocomial infection. The aim of the present study was to determine the nasal carriage rate of *S. aureus* among medical and veterinary students. A cross-sectional study was conducted on a total of 157 students (81 were medical students and 76 were veterinary students) between May and October 2022. Nasal swab from each student was collected and presumptive *S. aureus* was identified following conventional bacteriological methods. Isolates that were catalase-positive and coagulase-positive were taken presumptively as *S. aureus*. Isolates that gave negative reaction to coagulase were considered as coagulase-negative staphylococci (CoNS). The identification of *S. aureus* was confirmed by detecting the presence of species-specific nuc gene by polymerase chain reaction (PCR) assay. All staphylococci isolates were tested for antimicrobial susceptibility by disc diffusion method with a panel of 11 antimicrobials. Isolates displaying resistance to oxacillin and cefoxitin were further tested for the presence of mecA gene by PCR. The results of the study showed that 48.15% and 35.53% of medical and veterinary students, respectively were nasal carriage of *S. aureus*. Antimicrobial resistance profiling showed that all *S. aureus* isolates obtained from medical and veterinary students displayed resistance to Ampicillin and Penicillin. Resistance to Ciprofloxacin was varied among medical and veterinary students. About 80% of the total *S. aureus* isolates from medical students showed multi-drug resistance (MDR) (i.e. resistance to ≥ 3 antimicrobial classes) whereas about 50% of the total *S. aureus* from veterinary students were MDR. Among the 39 isolates obtained from medical students, 20 (51.3 %) were methicillin resistant and the rate of methicillin resistance among veterinary students was 22.2%. Only one factor presence of “Rhinorrhea” was found significantly associated with carriage of *Staphylococcus* sp. among medical and veterinary students.

Keywords: *Staphylococcus aureus*, MRSA, Coagulase negative staphylococci, Antimicrobial resistance.