

TITLE: QUANTIFICATION OF *Staphylococcus aureus* ON SMARTPHONES BELONGING TO HEALTH CARE PROFESSIONALS AND STUDENTS FROM THE CITY OF CURITIBA-PR

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ABSTRACT:

Staphylococcus aureus is a common pathogen found in hospital environment and equipments. Antimicrobial resistance genes are frequently found in *S. aureus* strains, which increases its pathogenicity. Methicillin resistance is particularly important, since it is a marker for beta-lactam resistant strains. Methicilin-resistant *S. aureus* (MRSA), once restricted to hospital environment, is now found in the community, including the domestic environment. The use of smartphones has grown alarmingly in both hospital and domestic contexts. Thus, it may facilitate the carriage of MSRA between these places. The objective of this study was to compare *S. aureus* and MRSA positivity rates, as well as the colonies count on the surface of smartphones of health care professionals with those devices from the control group consisting of undergrad college students. In this cross-sectional study, 200 smartphones were cultured, 100 of them belonging to the study group of health professionals of the Multiprofessional Integrated Residency Program of Clinics Hospital of the Federal University of Paraná (UFPR) and, as the control group, 100 devices of students of Biological Sciences Sector of UFPR. Those subjects who agreed to participate answered a questionnaire on smartphones use habits. Samples were obtained by pressing total surface area of the device on a dipslide containing Baird Parker agar medium (Laborclin, Curitiba-PR, Brazil). Presumptive *S. aureus* colonies with a lipase halo were counted and confirmed as *S. aureus* using Staphclin test (Laborclin, Curitiba-PR, Brazil). Confirmed *S. aureus* strains were tested for methicilin resistance using disc diffusion method. Comparison of positivity rates was performed using z-test and colonies counts between the groups were compared by Mann-Whitney test, $p < 0.05$ as significant. Statistical analysis was performed using GraphPad Prism 5.0 (GraphPad, San Diego, CA). In the study group 45% ($n=45$) were positive for *S. aureus* and seven of such isolates (15.6%) were confirmed MRSA. In the control group, *S. aureus* was detected in 35 (35.0%) samples, among which five (14.3%) were MRSA. Neither *S. aureus* ($p=0.19$) or MRSA ($p=1.00$) frequency differed between the groups. Median of the colonies count of *S. aureus* was 24.5 (range 0-314) in the study and 19,5 in the control group (range 0-160) and did not differ between them ($p=0.28$). In conclusion, these study data show a high rate of both *S. aureus* and MRSA in hospital and community environments.

Keywords: Smartphones, *Staphylococcus aureus*, Methicilin-resistant *Staphylococcus aureus*

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