

**TITLE:** EVALUATION OF THE MICROBIOLOGICAL QUALITY AND ANTIMICROBIAL RESISTANCE PROFILE OF MICROORGANISMS ISOLATED FROM WATER AND SOAPS FOR HOSPITAL USE

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**ABSTRACT:**

Hospital infections (HI) are a problem of great impact worldwide, covering aspects such as the quality of health professionals, facilities and hospital instruments. Among the factors that contribute to the occurrence of HI, contamination of water and soaps used in the hospital environment for hand washing of health professionals can be highlighted. This study aimed to analyze the microbiological quality of water and soap samples from Hospitals in Goiânia, Brazil. In soaps, the total aerobic mesophilic microorganisms were counted by pour plate and researches for *Pseudomonas aeruginosa*, *Staphylococcus aureus*, Gram-negative bile-tolerant bacteria, *Escherichia coli* and *Salmonella* spp were conducted. In the water samples determination of total heterotrophic bacteria, *P. aeruginosa* and presence or absence of total and thermotolerant coliforms were performed. Identification of the microorganisms was made using Vitek® 2 Systems identification cards. Antibiograms were done according to the disk diffusion method. Three out of 18 samples of water had bacterial counts higher than those recommended by current Brazilian legislation and the microorganisms *Alicyclobacillus acidocaldarius*, *Staphylococcus epidermides*, *Staphylococcus hominis* spp *hominis*, *Bacillus cereus* e *Sphingomonas paucimobilis* were identified, but none of the samples contained total and thermotolerant coliforms. From 18 soap samples, nine presented bacterial counts higher than those recommended by the Brazilian National Health Surveillance Agency, with presence of *Serratia marcescens*, *Raoultella ornithinolytica*, *Klebsiella pneumoniae* spp *pneumoniae*, *Klebsiella oxytoca*, *Pantoea* spp, *Staphylococcus lentus* e *P. aeruginosa*. Over than 70% of the strains isolate from soaps presented resistance to at least one antibiotic and one of the strains from the water was resistant to three antibiotics. To reduce the number of HI, it is crucial to strengthen control and prevention practices and hand washing is one of the main means of achieving this goal. However, this practice cannot be effective when the vehicles for its realization are not suitable for this purpose. The presence of potentially pathogenic bacteria with antimicrobial resistance observed in this study clearly indicates the need for more rigorous care regarding to the quality of water and soaps used in hospital settings, avoiding that these microorganisms come into contact not only with patients, but also with the hospital staff.

Keywords: Hand hygiene; Hospital infection; Antimicrobial resistance; Health professionals.