

ABSTRACT

Background: Disinfection of hospital environmental surfaces reduces contamination, and consequently, contributes to reducing the occurrence of hospital acquired infections. The study aimed at evaluating the effectiveness of the commonly used disinfectants (0.5% Jik, 70% alcohol and 20% v/v Chlorhexidine) at Kabale Regional Referral Hospital in southwestern Uganda.

Materials and Methods: This was a laboratory based quasi experimental study design involving use of different disinfectants. Hospital units (wards, theatre, and laboratory) that are used in handling of patients, patient's samples and infectious agents were included in the study. Environmental (72) swabs were taken from selected hospital units before and after disinfection (144 swabs) and three disinfectants (0.5% Jik, 70% alcohol and 20% v/v Chlorhexidine) were studied. The swabs were then cultured for bacterial growth to determine the bacterial distribution. Bacterial counts were obtained by counting colony forming units per milliliter (CFU/mL). Quantitative suspension test method was used to determine the effectiveness of the disinfectants where logarithm reduction factor of the disinfectants was determined. Logarithm reduction factor of ≥ 5 indicated that 99.999% of the bacteria was killed. Data was presented in form of tables and figures obtained using Microsoft Excel (2013). Data was summarized as means (standard deviations) and percentages, using STATA software. To control the quality of culture media, Known Standard bacterial strains; American Type Culture Collection (ATCCs) of *Staphylococcus aureus* (ATCC 25923), *Pseudomonas aeruginosa* (ATCC 15442), and *E. coli* (ATCC 25922) were used. Ethical approval was obtained from Research Ethics Committee of Mbarara University of Science and Technology (MUST-2021-106) and administration clearance from Kabale Regional Referral hospital

Results: Of the 72 environmental swabs from different sites before disinfection, 25/72 (34.7%) showed growth of bacteria. *Staphylococcus aureus* 8/25(32%) was the most isolated bacteria while *Pseudomonas aeruginosa* 1/25(4%) and *Enterococcus faecalis* 1/25(4%) were the least isolated from the hospital units. Of the 8 hospital units swabbed before disinfection, 6/8 (75%) showed growth. Paediatric ward was the most contaminated Hospital unit with 7/25 (28%) of the bacteria isolated. All studied disinfectants showed log reduction factors of ≥ 5 at 3 minutes contact time with 70% alcohol, 20% v/v Chlorhexidine and 0.5% Jik showing log reduction factors of 6.7, 5.4 and 5.0 respectively.

Conclusion: All disinfectants studied showed effectiveness against bacteria isolated at contact time of ≥ 3 minutes, and 70% alcohol was the most effective disinfectant (log reduction factor of 6.7 at 3 minutes contact time).