



## KEY POINT SUMMARY

### OBJECTIVES

To identify and quantify the bacterial contamination of hand air dryers typically used in restrooms.

## Assessment of the Bacterial Contamination of Hand Air Dryer in Washrooms

Alharbi, S. A., Salmen, S. H., Chinnathambi, A., et al. 2016 | *Saudi Journal of Biological Sciences*. Volume 23, Issue 2, Pages 268-271

### Key Concepts/Context

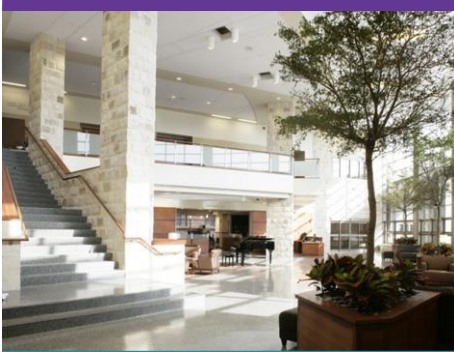
Hand hygiene is an essential factor in mitigating the spread of infection, and previous studies indicate that wet hands have the potential to spread up to 1000 times more bacteria than dry hands. This underscores why hand drying methods are frequently researched and debated; there are conflicting findings concerning whether or not hand air dryers spread trace amounts of microorganisms through the air, or are generally more or less effective than drying with paper towels. Additional studies concerning hand air dryer efficacy are needed to help identify more effective evidence-based hand drying methods.

### Methods

Fifteen air-dryers from the restroom of an academic institution were examined for bacterial contamination. Dryers were switched on for 30 seconds while air was projected onto nutrient agar medias within different petri dishes. Petri dishes were incubated for 48 hours at a temperature of 37° C prior to the bacteria quantifying process. Other petri dishes were placed around the washroom for 10 minutes, and were similarly incubated prior to bacterial counts.

### Findings

Analysis revealed five different types of bacteria that were isolated from the hand dryer petri dish samples, 95% of which indicated the presence of the pathogen staphylococcus. The petri dishes located around the washroom itself found staphylococci and micrococci in 95% of the air, with 56% of these bacteria indicating the presence of the potential pathogen *Staphylococcus aureus*. These results indicate that hand air dryers produce increased amounts of ballistic bacterial droplets, which are spread throughout the room to a notable degree.



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**Limitations**

Data from this study were derived from a single location after a single experiment. Data concerning restroom usage, size, and location relative to other parts of the academic institution were not considered. No data from rooms without hand air dryers were presented to represent the average levels of airborne bacteria within the academic institution.

**Design Implications**

Designers and healthcare providers should carefully consider which hand drying resources are provided for all occupants within a healthcare environment; evidence showing the spread of bacteria from hand air dryers may inspire a switch to paper towels; however the efficacy and sustainability of paper towel usage should also be taken into consideration. Designers who choose to implement hand air dryers should consider placing them in locations that are noticeably separated from sensitive patient populations. The authors of this paper suggest they should not be used in medical structures in general.

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