

Pilot study of Epidemiology of Coliform Bacteria in Different Area of Public Bathroom of Outpatient Building, Siriraj Hospital

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INTRODUCTION

Hospital public restrooms are high-risk areas for bacterial spread due to frequent use by many people. Studies show that the toilet seat is often the most contaminated surface especially by coliform bacteria. Regular cleaning may not fully eliminate bacteria, highlighting the need for better infection control strategies.

METHODS

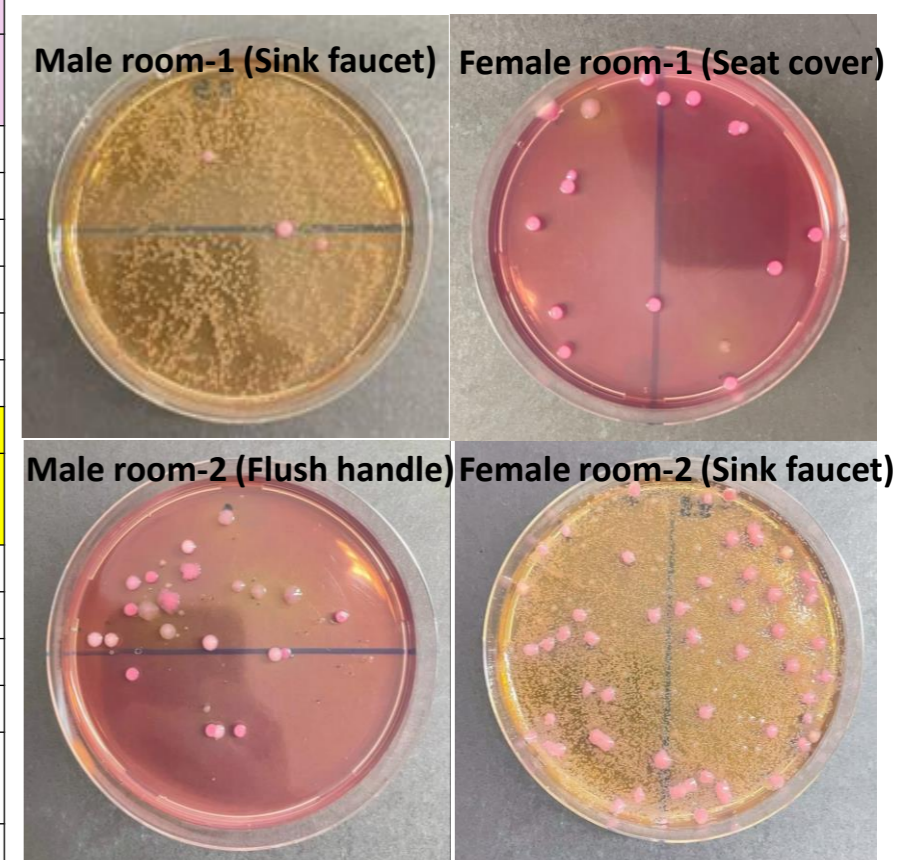
We conducted a pilot study to investigate the epidemiology of coliform bacteria in public restrooms at Siriraj Hospital, Bangkok, Thailand. We randomly collected samples from six sites (inner door lock, toilet seat cover, flush handle, bidet hose, sink faucet, and handrail in the accessible restroom) within each of six restrooms (two female, two male, and two accessible restrooms) in the outpatient clinic of the Internal Medicine Department. We used a cotton swab soaked in normal saline to collect samples from an area of approximately 10 cm², which were then transferred to normal saline transport media. A 100-microliter loop was subsequently used to spread the samples onto MacConkey agar. After a 24-hour incubation period, colonies were counted and reported as colony-forming units (CFU).

Table 1. presents colony counts (median [min-max]) by location and bacterial type (fermentative vs. non-fermentative). The highest fermentative counts were on the sink faucet (0 [0-58]), toilet seat cover (0 [1-16]), and flush handle (0 [0-16]). For non-fermentative bacteria, the top sites were the sink faucet (201 [0-1000]), toilet seat cover (2 [0-19]), and bidet hose (1 [0-98]). The predominant gram-negative bacteria species were identified as *E. coli*, *K. pneumoniae*, and *P. aeruginosa*.



Table 1. The colony count of gram-negative bacteria, stratified by bacteria type and location of specimen collection

	Fermentative bacteria						
	Male room-1	Male room-2	Female room-1	Female room-2	Accessible room-1	Accessible room-2	Median [min-max]
1. Inner door lock	0	0	0	0	0	0	0
2. Toilet seat cover	1	0	16	0	0	0	0 [0-16]
3. Flush handle	0	16	0	0	0	0	0 [0-16]
4. Bidet hose	0	0	0	0	0	0	0
5. Sink faucet	3	0	0	58	0	0	0 [0-58]
6. Handrail	-	-	-	-	0	0	0
	Non-fermentative bacteria						
	Male room-1	Male room-2	Female room-1	Female room-2	Accessible room-1	Accessible room-2	Median [min-max]
1. Inner door lock	2	1	0	0	0	0	0 [0-2]
2. Toilet seat cover	19	0	2	0	2	8	2 [0-19]
3. Flush handle	0	32	0	0	0	0	0 [0-32]
4. Bidet hose	1	0	0	0	1	98	0.5 [0-98]
5. Sink faucet	667	402	0	1000	0	0	201 [0-1000]
6. Handrail	-	-	-	-	0	0	0



CONCLUSION

The sink faucet was the most contaminated area, harboring not only coliform bacteria but also nosocomial pathogens. This area requires special attention, and cleaning staff should be particularly vigilant, as it may pose potential health risks within the healthcare facility.