

UNIVERSITI TEKNOLOGI MARA

**PRESENCE OF ESCHERICHIA COLI
ON THE DOOR HANDLES AND SINK
TAP HANDLES SURFACES OF THE
TOILETS AT HOSPITAL**

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Project submitted in fulfillment of the requirements for
the degree of

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(Hons.)**

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AUTHOR'S DECLARATION

Project entitled 'Presence of *Escherichia Coli* on the door handles and sink tap handles surfaces of the toilets at the hospital' is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature review, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Mr Megat Azman bin Megat Mokhtar as Project supervisor. It has been submitted to the Faculty of Health Sciences in fulfilment of the *requirement for the Degree of Bachelor in Environmental Health and Safety (Hons.)*

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"In the name of Allah, the Compassionate, the Merciful, Praise be to Allah, Lord of Universe and Peace and Prayers be upon His Final Prophet and Messenger."

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ABSTRACT

Nosocomial infection or Health acquired Infection (HAI) has become one of the major problems not only in Malaysia but throughout the global where it is caused by bacterial contamination especially *Escherichia Coli*. Door handles and sink tap handles are chosen in this studies because both of the surfaces are surrogate markers of nosocomial infection . The objectives of this study was to determine the presence of *Escherichia Coli* on the door handles and sink tap handles surfaces of the toilets in the wards that can cause cross transmission of nosocomial infection to the patients. *Escherichia coli* were chosen to be an indicator to prove the cleanliness of the environment because there is no standard guide in Malaysia used for determining the microbiological contamination in the hospital environment. A total of 123 surfaces (41 exterior toilet's door handles, 41 interior toilet's door handles & 41 sink tap handles surfaces) in fifteen wards of medical department were swabbed over the study period. All of the swab sample were obtained using standard bacterial collection techniques, followed by plating and culture. It was serially diluted up to 10^{-4} using 0.1 % peptone water as diluent. The dilutions were inoculated on Mac Conkey agar for total count of the colony (cfu/ml) using Surface-Spread Plate technique and plate were inoculated for overnight at 37°C . The identification of the bacteria were determined by their morphology, cultural characteristics and biochemical confirmation test. It was resulting 100% of the 123 surfaces were positive *Escherichia Coli* growth. Bacteria load ranged from the total plate count of bacterial population in all samples were in the range of 2.7×10^3 cfu/ml to 2.11×10^4 cfu/ml. This study proved that the contamination of *Escherichia Coli* is continuously from the interior toilet's door handles surfaces to exterior toilet's door handles surfaces and sink tap handles surfaces. It shows the unhygienic status of the people's hand throughout the day at the hospital. This study reveals the contamination of the surfaces in the toilets at the hospital was proved operating less than satisfactory. It can be concluded as door handles and sink tap handle have a possibility for microbial cross transmission in the toilets at the hospital and one of the factors of why nosocomial infection cannot be control in the hospital. In the future, it is recommended to compare the Colony Forming Units (CFUs) in various types of surfaces in the toilets to evaluate the other potential nosocomial infection transmission surfaces which can exist in the hospital.

Keywords: Escherichia Coli, Door handles contamination, Nosocomial infection, Medical wards