



“Sanitation & Hygiene in Indian Trains: Determination of Bacterial Load on Toilet Door Handles of Train.”

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ABSTRACT

Regularly, approximately 1.4 crore people transported by Indian Railway are most performed mode of transport for the masses in India. The main aim of this work is to prove the prevalence of pathogenic bacteria on door handles of trains toilet and coaches. Samples collected from the trains passing through Malkapur railway station of Buldana district.

The bacteria isolated were coliforms, E.coli, Pseudomonas, S.aureus & Salmonella. To summarize the contamination of train toilet & coach handles largely unnoticed but can causes serious infection such as Diarrhea, Dysentery, Typhoid, Hepatitis & Food infection . Hence this will help to evaluate the effect of unhygienic sanitation on public health & ensure the need for basic sanitation practices at Indian railway station .

I. INTRODUCTION

Railway are the most preferred mode of transport for the masses of India, running 9,000 trains reaching 8,000 stations & transporting approximately 1.4 crore passengers per day . One of the commitments of railway in the citizen charter on passenger services on Indian Railway is to provide safe & dependable train services to the passengers & ensure adequate passengers amenities in trains & railway station , which include provision of clean & hygienic surroundings both at train & railway stations. Indian railway might be hit by serious of problems including basic hygiene particularly unclean toilets that appear to be a biggest concern in mind of frequent travelers. A survey conducted earlier by some researcher, state that the unclean toilet & unclean coaches were the main issue. The microorganisms are ubiquitous & constitute chief part of every ecosystem. The transmission diseases through hand contact have been an area of major concern. Microbes in various environments live either freely are as parasite. Daily interaction of people contributes to spreading of diseases but a major source & spread of community acquired infection are fomites it includes toilet door in Indian railways. People are in danger from the use of such toilet

when the microbes enter the body through hand to mouth contact or hand to food contact. Public toilets have a large interchange of users who deposit on the doors handles their own microbial flora and other organism. The presence of pathogenic bacteria on handles is major source for transmission of diseases to vulnerable people. The present study showed the striking presence of pathogenic bacteria on the train toilet door handles of trains. This will be help to evaluate the effect of unhygienic sanitation on public health and ensure the need for basic sanitation practices at trains toilet handles.

II. MATERIAL AND METHOD

A. Sample collection:

25 samples were collected from the trains toilet door handles and at entry door handles using sterile cotton swab moistened with nutrient broth from the trains passing through Malkapur Railway station Of Buldana District & transported to laboratory.

B. Bacterial Analysis:

The samples collected, inoculation performed on following medium.

- 1) Eosine Methylene Blue Agar- For isolation of *Escherichia coli*.
- 2) Cetrimide Agar - For isolation of *Pseudomonas* species.
- 3) Mannitol Salt Agar - For isolation of *Staphylococcus aureus*.
- 4) Bismuth Sulfite Agar - For isolation of *Salmonella typhi*.
- 5) Lactose Broth - For coliform determination.

III. OBSERVATION & RESULT

In this study, door handles of toilet and coach entry door were evaluated for the presence of pathogenic bacteria and Coliforms. The obtained result showed that swabs had microbial contamination.

Table 1. Bacteria Isolated From toilet handles and coaches entry handles.

Microorganisms	Toilet handles		Coaches entry handles	
	No. Plates	No. percentage	No. Plates	No. percentage
1) <i>S. typhi</i>	08	32%	04	16%
2) <i>E. coli</i>	18	72%	18	72%
3) <i>S. aureus</i>	17	68%	10	40%
4) <i>Pseudomonas</i>	09	36%	05	20%
5) Coliforms	25	100%	25	100%

The study revealed that, Coliforms bacteria & *E. coli* present in all the samples collected shows high risk of faecal to oral transmission and hence chances of transmission of pathogens from human intestinal tract the *Salmonella* isolated from 08 toilet handles & 04 coach samples. *S. aureus* isolated from 17 toilet handles and 10 coach entry handles and 05 coach entry handles.

This observation could be due to poor sanitary conditions and lack of regular toilet maintenance like cleaning with disinfectants, not washing hands with disinfectant soap after using toilet.

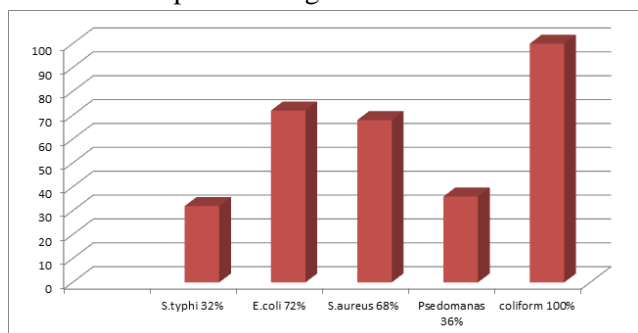


Figure 1. Bacterial isolates and their percentage of prevalence on Train toilet door handles.

IV. CONCLUSION

Approximately 1.4 corer people transported by Indian railway regularly . People are in danger from the use of contaminated toilet handles & coach entry doors by pathogenic microorganisms. Microbes enter the body through hand to mouth contact or hand to food

contact. The obtained results shows the presence of *S. aureus*, *Pseudomonas*, *Salmonella*, *E. coli* And Coliforms. The present study also demonstrate that the majority of bacteria transmitted through train doors handles are pathogenic. Washing hands after use of toilet should be inculcated among people. Government organization in developing countries including India should take measure to prevent the transmission of diseases and protect community health. Community should also be educated about the significance of washing hands by disinfectant/soap after using the toilet and done by everyone.

V. REFERENCES

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