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## RESEARCH ARTICLE

# MICROBIAL CONTENT OF HAND WASH SOAP BOTTLES USED IN DENTAL CLINICS-AN IN VITRO STUDY

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**ABSTRACT**

**Aim:** To determine the microbial content present in the hand wash soap bottles used in dental clinics.
**Materials and method:** Swabs were collected from 10 different clinics from the hand wash soap bottles used in dental clinics. They were then cultured in agar medium and the microbes were identified by its morphology and gram staining.
**Background:** Hand Washing continues to be the single most important step in the prevention of the spread of infection in hospitals. There is a wealth of information on the antimicrobial properties of soaps, detergents, and disinfectants and their efficacy for the removal of microorganisms from skin. There have also been reports of contamination of disinfectants and cleaning solutions in hospitals, leading to out breaks of infection.
**Result**: The hand wash soap bottles used in dental clinics are contaminated with various microorganisms such as enter ococcus, micrococcus, streptococcus viridans etc.



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## INTRODUCTION

Infection control is one of the most vital and fundamental aspect of health-care practice pertaining to the faculties of medicine, surgery, or dentistry. The nature of dental procedures will involve occupational exposure to blood and saliva that may carry microorganisms. Dental practitioners and dental patients are at a high risk for developing infectious diseases (Muralidharan, 2013). Hence hand washing continues to be the single most important step in prevention of the spread of infection. Washing hand using soap and water is universally accepted practice for reducing the transmission of potentially pathogenic microorganisms. The bulk soap refillable dispensers are more prone to bacterial contamination and causes several outbreaks of infection linked to the use of contaminated soap bottles (Archibald ; Barry *et al*.,). In the profession of dentistry we work in close relation with oral cavity (Kabara; McBride; Brook; McNaughton; Parasakthi, 2000; Sartor, 2000 Weber *et al*., 2007). It is the prime duty of the dentist to prevent cross contamination which implies patients as well as personal safety.

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However soaps that are used in the dental clinics can get contaminated with the bacteria and poses a recognised health risk. This raises the concern that even the bar soaps used in the warfare against microbes become a harbour of microorganism, which may cause an outbreak of infection. Liquid soaps should be stored in closed containers and they should be dispensed from either disposable containers or containers that are washed and dried thoroughly before refilling. Liquid soap should not be added to a partially empty dispenser, because this practice of "topping off" can lead to bacterial contamination of soap and reduce the beneficial effect of hand cleaning and disinfection (Boyce, 2002). Contamination of hand wash soap can be mainly caused due to two reasons. Contamination from the environment is a cause, as the soap bottles are openly exposed to the organisms in the environment. Secondly, the continuous use of soap by dental practitioners can cause continuous inoculation of bacteria from their hand. In the absence of proper hygiene and contamination of hand wash soap bottles cross contamination can occur.

## MATERIALS AND METHODS

The estimates sample size of 10 was chosen and the sample were collected aseptically by rotating sterile cotton swabs moistened with peptone water over the hand wash soap bottles that are used in the dental clinics.

The swabs are then cultured in BHI agar medium and incubated at 37 degree Celsius for 24hrs. The growth on the plates were differentiated and identified by morphology and gram staining

## RESULTS

The swabs were taken from 10 different clinics and was given to microbilogy department. From the study it was found that there is more number of enterococcus and micrococcus.

| Clinics | No of microorganism (colony factor unit) | Predominant organism present |
|---|---|---|
| Clinic1 | 43 | Bacillus |
| Clinic 2 | 25 | Enterococcus |
| Clinic 3 | 34 | Bacillus |
| Clinic 4 | 20 | Viridansst |
| Clinic 5 | 1 | Enterococcus |

| Clinics | No of microorganism (colony factor unit) | Predominant organism present |
|---|---|---|
| Clinic 6 | 2 | Enterococcus |
| Clinic 7 | 23 | Micrococcus |
| Clinic 8 | 31 | Enterococcus |
| Clinic 9 | 35 | Enterococcus |
| Clinic 10 | 38 | Micrococcus |

## DISCUSSION

The purpose of this study was to evaluate the microbial contamination of the hand wash soap bottles used in dental clinics and it was found that there were large number of enterococcus and micrococcus present. Enterococcus, they are gram positive cocci. These microorganisms can cause urinary tract infections, endocarditis, wound infections, meningitis, intra-abdominal and pelvic infections and nosocomial infections (Archibald, 2001). Micrococcus occur in wide range in water, dust, soil etc. They are gram positive. They are mostly seen in immune compressed patients. Streptococcusviridans are organisms that are found mainly in oral cavity. They can also be present in upper respiratory tract, gastrointestinal tract and genitourinary tract. This microorganisms can invade sterile body sites which can lead to life threatening diseases such as endocarditis, pneumonia and meningitis. The predominant method to prevent the cross infection is by practicing adequate hygiene practices (Velmurugan Rajana *et al*.,). In a country like ours, one of the main methods to achieve this goal is the use of liquid soap sachets.

### Conclusion

The findings of this study have shown that hand wash soap bottles is the main harbor for microorganisms and therefore causing greater harm and thus nullifying the actual purpose of handwashing. This study should be considered as an "eye opener" by every dental practitioner whose duty towards all the patients is to protect them from cross-infection.

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