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Research Article

BUGS IN OUR BAGS: MOBILE PHONES; A DEADLY DEVICE – ORIGINAL RESEARCH

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A R T I C L E I N F O

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A B S T R A C T

Introduction: Enterococcus species are normal commensals of the GIT, oropharynx, female genital tract and skin with E.*faecalis* and E.*faecium* being most common. They cause nosocomial bacteremia, endocarditis and UTI. The fatality rate of E.*faecalis* is 22.8% and of E.*faecium* is around 25-50%.[3] E .faecium is highly resistant to Vancomycin. There is a risk of transmission of nosocomial infections, due to the increased virulence of E. *faecium* and its prevalence in mobiles of dental practioners. Mobiles are ubiquitous in a dental set up and have been shown to be contaminated with pathogenic organisms thus contributing to the transmission of infection from patient to dentist and vice versa.

Aims & Objectives: To evaluate the presence/absence of E. *faecium* in smears of mobiles of dental practioners.

Materials &Methods: A sterile cotton swab dipped in sterile normal saline was rolled over the exposed surfaces of mobiles of 30 dentists. Swabs were dropped into BHI broth and incubated for 2 hours. 100 microlitres of broth were utilized to grow the species on HiChrom Agar, incubated aerobically at 37°C for 2 days. All the green colored colonies were counted using direct plate counting representing E. *faecium.*

Result: E. *faecium* were prevalent in 96.67% of the samples (29/30). The mean CFU's was 22.2± 4.02 (Mean ±S.E.).

Conclusion: The present study is first of its kind which showed definite prevalence of E. *faecium* in mobiles of dentists. There could be a possibility that biofilm in other dental equipments maybe colonized by E. *faecium* and since these life-threatening species may potentially infect either the dentist or the patients, further cross-sectional studies with larger samples may be required to establish the same.

INTRODUCTION

The history of evolution shows how man always has to choose amid making the right or wrong use of the discoveries of science. This has never been more true & relevant than in our own age. We should be grateful & thankful to scientists & inventors who invented the modern marvels for our daily use. It would be unappreciative on our part not to concede how immense the blessing which modern technology has given to mankind is. One such invention is the discovery of mobile phones. This device carries the property of being compact, easy to store and use, serving purpose of communication. Such a device termed "cellular phones," what we understand is become a part of everyone's life without which there may be chances that a person's daily activity will be hampered. The number of mobile users worldwide is above 6,800,000,000 which are further increasing at a very fast rate.[4]

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India stands second with over 900 million users in the world. The fact is that mobile phones are used at an enormous number by all the age-groups in today's scenario. It has been noted that the average person spends 90 min a day on their phone.

Among the population, health care providers have no different role to play. Their dependency can be justified due to their noble profession that requires immediate access in cases of emergencies. Amongst the health care providers, dentistry is as an operative field by what the dental surgeon needs infection control to maximum since routine involvement in procedures. The use of cellular phones during the treatment would disturb the infection control. Mobile phones are considered as a potential source of nosocomial infection. It has risk of contamination if hygiene protocols are not followed. Thus, cell phones can be regarded as a niche for microorganisms to breed and cause hospital acquired infections.

MATERIALS AND METHODS

30 individuals were selected randomly for the study. A sterile cotton swab dipped in sterile normal saline was rolled over the exposed surfaces of mobiles of these dentists. [Fig 2] The sterile cotton swabs were dropped into Brain Heart Infusion broth and incubated for 2 hours. [Fig 3] 100 microliters of this broth were utilized to grow the species on Hi Chrom Agar. [Fig 4] This was incubated aerobically at 37°C for 2 days. All the green coloured colonies were counted using direct plate counting representing E.*faecium*. [Fig 5a, Fig 5b]

Fig 1 shows Armamentarium

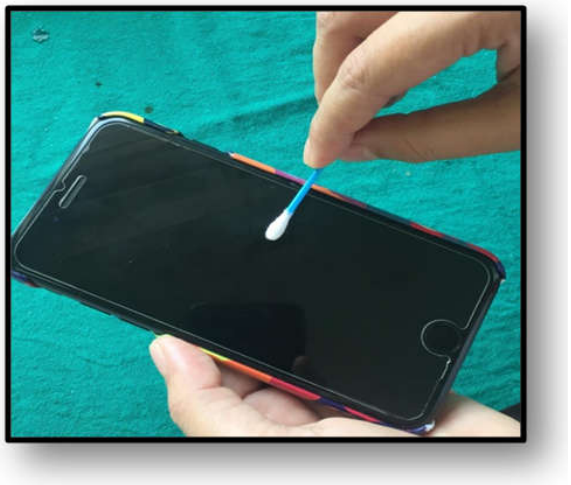


Fig 2 shows taking a swab from the specimen

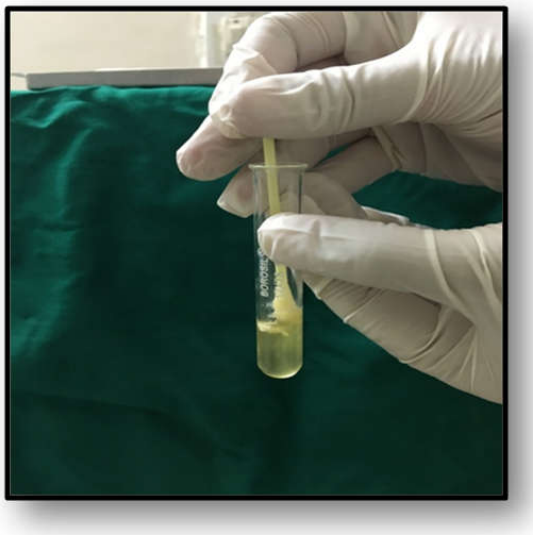


Fig 3 shows Dropping the specimen in BHI broth

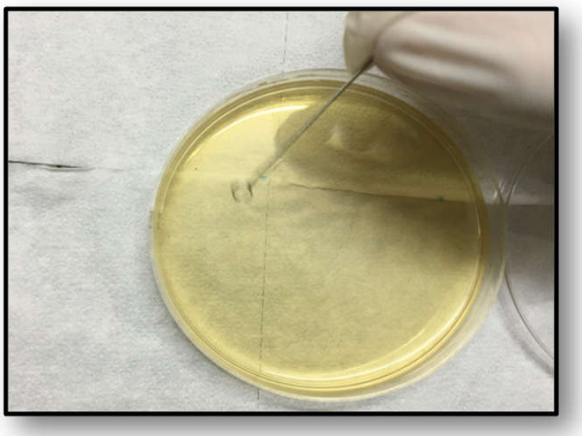


Fig 4 shows Streaking the agar plate. Plate

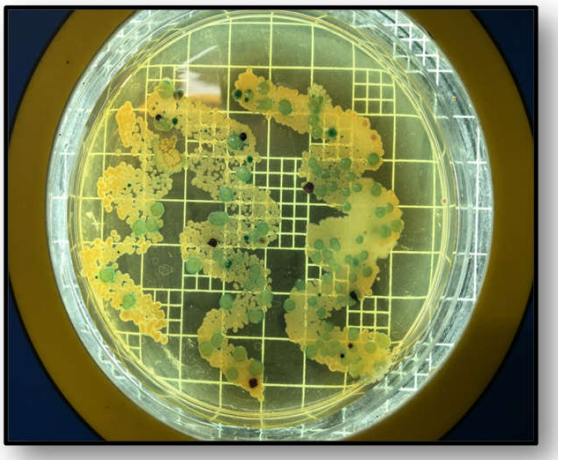


Fig 5 a Green colored colonies of E. faecium

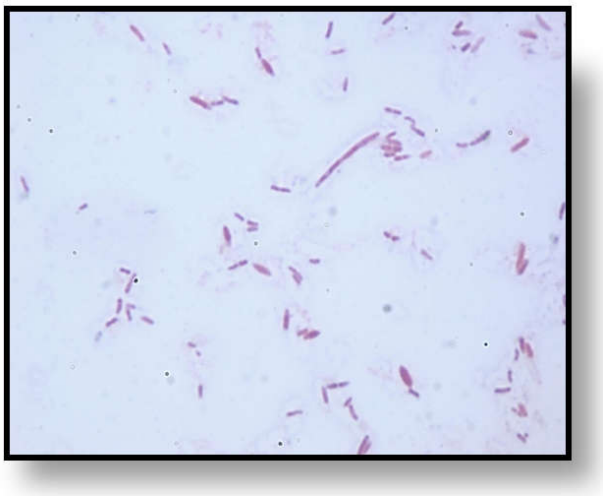


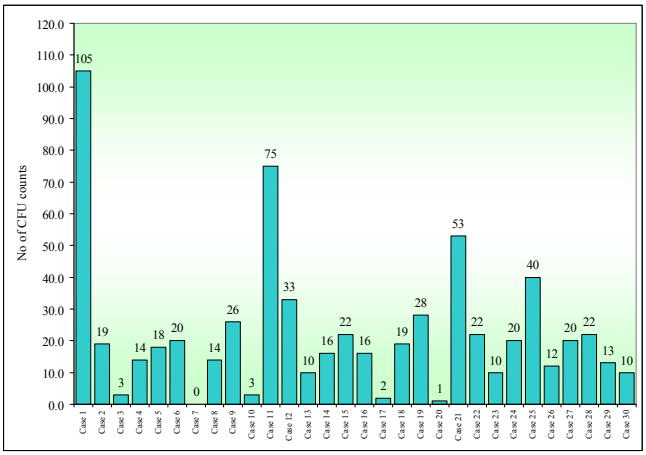
Fig 5b E faecium in short chains and pairs

RESULTS

E.*faecium* were prevalent in 96.67% of the samples (29/30). The mean CFU's was 22.2± 4.02 (Mean±S.E.). [Table 1, Graph 1]

Table 1 shows Descriptive statistics for Colony Count for Enterococcus faeceium

Descriptive stat	Value
n	30.00
Minimum	0.00
Maximum	105.00
Range	105.00
Mean	22.20
Median	18.50
Mode	10.00
Std. Deviation	22.02
Variance	484.86
Std. Error of Mean	4.02



Graph 1 shows the number of colony forming units

DISCUSSION

Keeping the mobile phones in the pockets, handbags and snug pouches increases the possibility of bacterial propagation. Warmth and ideal temperature conditions, heat generated by cellphones contribute to harbouring bacteria on the device at a distressing rate.[1] However, cell phones that are rarely cleaned and often touched during or after the examination of patients without hand-washing can port various possible pathogens and become an exogenous source of infections among patients.

The use of cellular phones is highly prevalent amongst healthcare officials playing a major role in life and helps in communication of hospital related affairs. In earlier times the role of mobile phones in transmission of infections was not given much heed. Preventing cross infection in dentistry is a basic issue in dentistry profession, because the dentistry environment is an environment in which the transmission of infectious diseases occurs easily.

Cellular phones of dental operators have shown maximum bacterial and fungal growth. Enterococcus species are normal commensals of the GIT, oropharynx, female genital tract and skin with E.*faecalis* and E.*faecium* being most common. It has an ability to develop resistance to multiple antibiotics, including vancomycin and thus can cause serious health hazards. They cause nosocomial bacteremia, endocarditis and UTI.[4] The fatality rate of E.*faecalis* is 22.8% and of E.*faecium* is around 25-50%.[3] E.faecium is highly resistant to Vancomycin. There is a risk of transmission of nosocomial infections, due to the increased virulence of E. *faecium* and its prevalence in mobiles of dental practioners. In our study E.*faecium* were prevalent in 96.67% of the samples (29/30). The mean colony forming units was 22.2± 4.02 (Mean±S.E.). The high prevalence of bacterial agents isolated from mobile phones was attributed to the poor hygienic and sanitary practices.[2] These growths are potential for development of nosocomial infections within the dental clinics. It has the capacity to the extent even at the community level whereby the patients, professionals and other members of population interact.

CONCLUSION

The present study is first of its kind which showed definite prevalence of E. *faecium* in mobiles of dentists. There could be a possibility that biofilm in other dental equipments maybe colonized by E. *faecium* and since these life-threatening species may potentially infect either the dentist or the patients, further cross-sectional studies with larger samples may be required to establish the same.

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