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MOBILE PHONES: POTENTIAL VECTOR FOR NOSOCOMIAL INFECTION

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ABSTRACT

Background and Objectives: Mobile phone is indispensible accessories of our life. However, cell phones which are seldom cleaned and often touched during or after the examination of patients without hand washing can be substrate pathogens and become an exogenous source of nosocomial infections among hospitalized patients. These can harbor various potential pathogens and become an exogenous source of nosocomial infections. **Materials and Methods:** 200 samples from touch and non-touch mobiles of health care workers were collected and subjected to culture and sensitivity as per the standard guidelines. **Results:** Out of 200 isolates, 80.5% showed growth predominately on Keypad mobiles. The most common organism colonized on Keypad mobiles were *Coagulase-negative* staphylococcus in 45.0% and 38.5% on Touch screen mobiles. 6.5% MRSA were detected only on Keypad mobiles. **Conclusion:** Colonization was predominately seen in keypad mobiles of Healthcare persons.

KEYWORDS: Healthcare persons, Nosocomial.

INTRODUCTION

With recent advances in the source of information, use of mobile phones has become indispensible in the hospitals. [1] Question of concern is how to use the mobile phones sensibly, getting their benefits and minimizing their risks. In an emergency, surgeons can seek urgent help from their superiors and colleagues, call for an opinion from the biomedical or electrical staff in case of any mechanical or instrument failure in the middle of the surgery.

[2] Another point of view argues that, if mobile phones are used carelessly in surgical wards or intensive care units (ICU), they may act as a source of infection to patients while handling them, such as during dressing of surgical wounds. [3] These cells phones can harbor various potential pathogens and become an exogenous source of nosocomial infection among hospitalized patients and also a potential health hazard for self and family members.[1] Our study was carried out to know the carriage rate of cell phones of health care persons working in various departments of our hospital.

MATERIALS AND METHODS

Study included screening of mobiles of 200 Healthcare persons of different departments of tertiary care centre, Bhopal (M.P) Sterile swabs moistened with peptone water were used to collect specimens from the Keypad in Nontouch mobiles & from screen in Touch mobiles. These swabs were brought to the department of Microbiology, where they were subjected to culture on blood agar and Mac Conkey agar. After incubation for 24 hours at 37 degree Celsius, the growth obtained was identified on the basis of colonial morphology, by gram staining and various biochemical tests following standard procedures. [4] The isolates were further subjected to antibiotic sensitivity testing by Kirby-Bauer method. [5]The results were interpreted according to CLSI guidelines. [6] Staphylococcus aureus were screened for MRSA by using Cefoxitin (30µ) disk diffusion method.

RESULTS

Out of 200 swabs from mobiles of Health care persons i.e.100 Keypad mobiles & 100 Touch mobiles were screened .161(80.5%) samples showed growth i.e. 91(91%) Keypad mobiles & 70 (70%) Touch mobiles; **as shown in Fig: 1.**

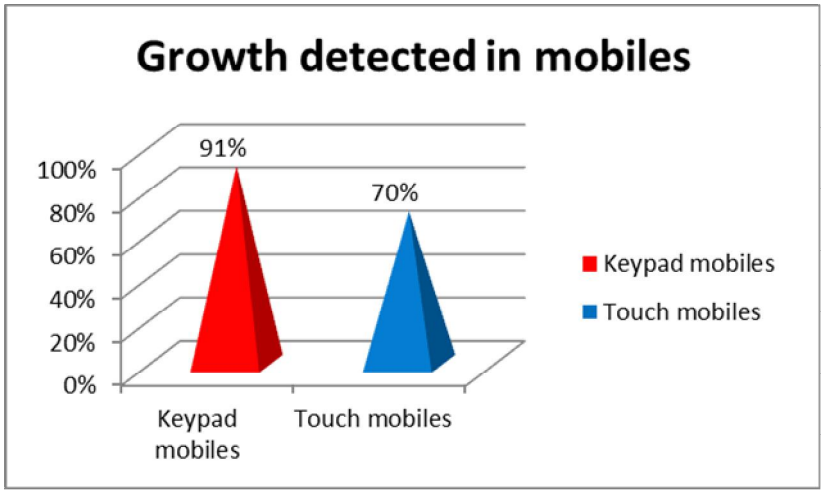
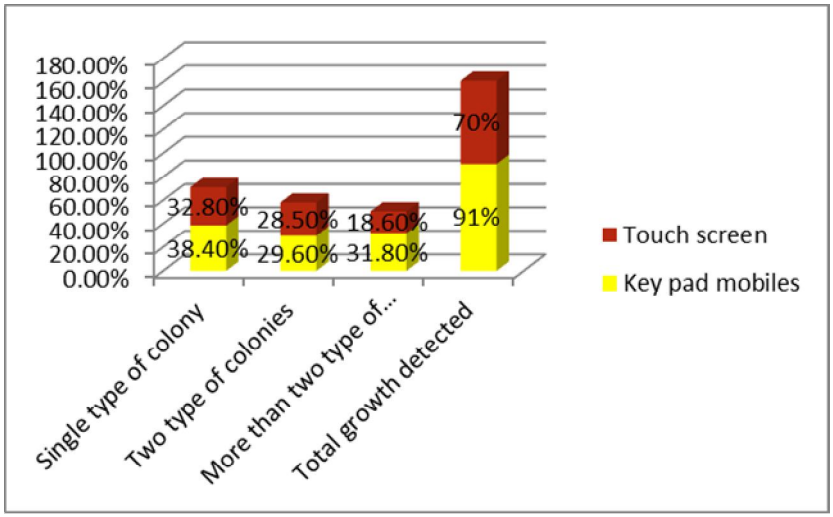


Fig: 1.

Among keypad mobiles 35 (38.4%) had a single type of colony, while 27(29.6%) had two types of colonies and 29 (31.8%) had mixed growth of more than two organisms. Among Touch screen mobile 23(32.8%) showed contamination with single type of colony, 20(28.5%) had two types of colonies and 17(18.6%) had mixed flora; as shown in table: 1 and Fig: 2

Table 1: Type of microbial flora detected

	Single type of colony	Two type of colonies	More than two type of colonies	Total growth detected
Key pad mobiles	35(38.4%)	27(29.6%)	29(31.8%)	91(91%)
Touch screen	23(32.8%)	20(28.5%)	17(18.6%)	70(70%)



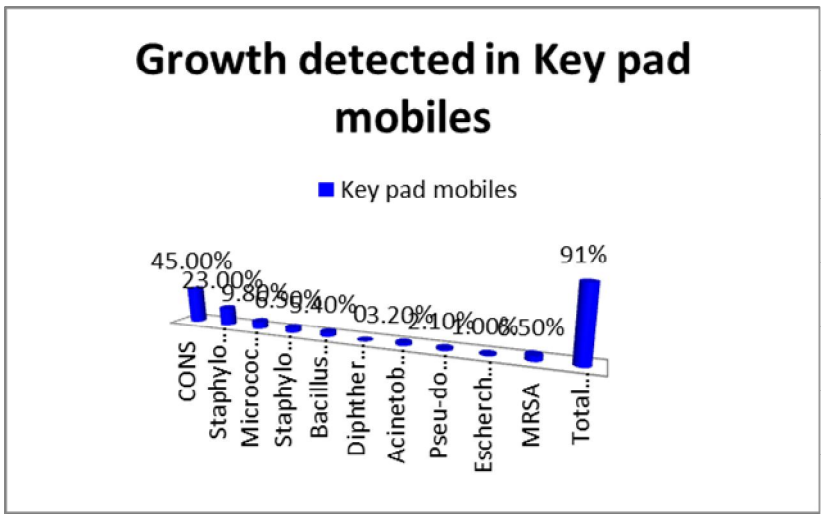


Fig: 2

The most common organism detected in 91 Keypad mobiles showed contamination, which were *Coagulase-negative staphylococcus* in 41(45.0%), *Staphylococcus aureus in* 21(23.0%),

Micrococcus in 09(9.8%), *Staphylococcus citreus in 06* (6.5%), other contaminating pathogens were *Bacillus species in 05(5.4%), Diphtheroids 03 (3.2%). Acinetobacter species 03(3.2%), Pseudomonas aeruginosa 02 (2.1%)* , *Escherchia coli* 01 (1.0%), and Methicillin-resistant *Staphylococcus aureus* organisms detected in 06 (6.5%) isolates. ; as shown in Fig:2.

Among 70 isolates in Touch mobile, most common organism detected were *coagulase-negative staphylococcus in 27 (38.5%), Staphylococcus aureu in 17 (24.2%), Micrococc 05(7.1%)i, Bacillus spp 03(4.2%), Acinetobacte species 01(1.4%),* No methicillin-resistant *Staphylococcus aureus* organisms detected.; as shown in Fig: 3.

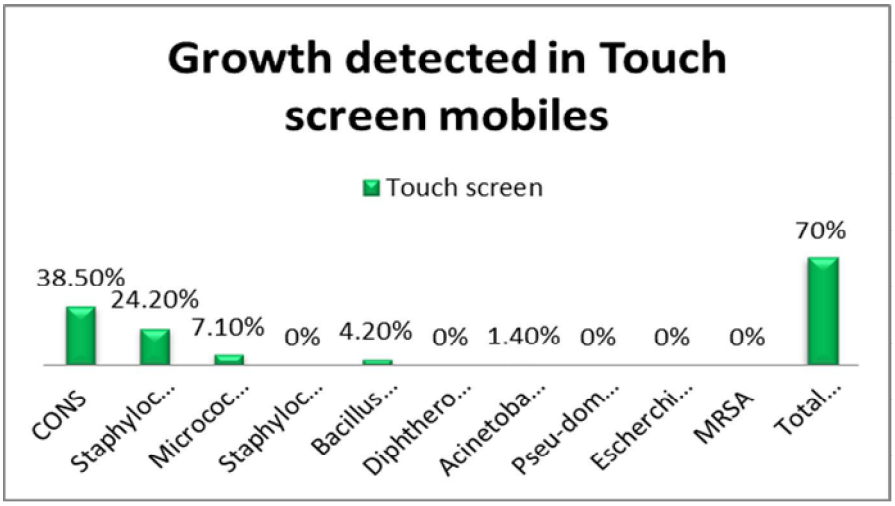


Fig: 3

Thus overall growth detected in mobiles was 80.5% which was predominated by CONS 42.2% and least was Gram negative bacilli E.coli 0.60%; as shown in Fig: 4.

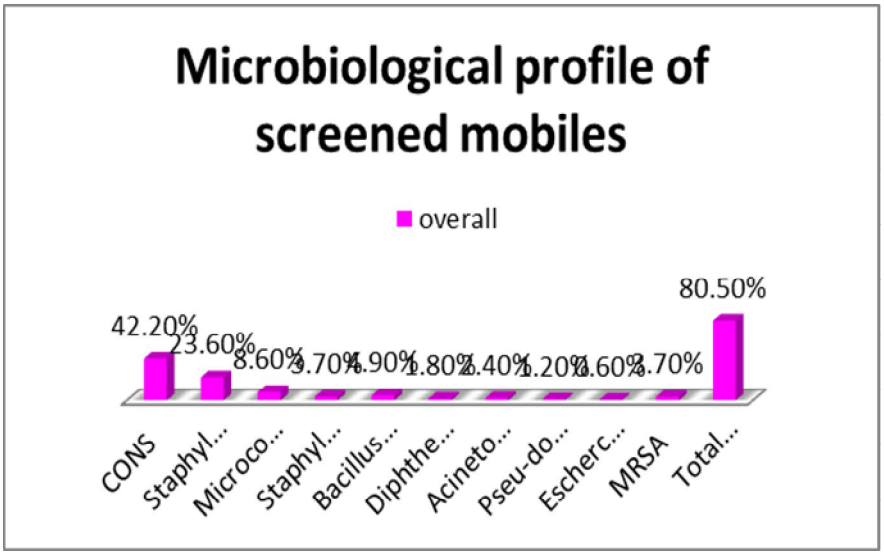


Fig: 4

DISCUSSION

The carriage rate of bacterial isolate was 80.5% among Health care persons which was in accordance with Jayachandra T. et al [7] (2011) 84.30%, Jayalakshmi J. et al [8] (2008) 91.67% and Bhat s [9] (2011) 98.50% .

Overall Coagulase negative Staphylococci (CONS), 42.2% were found to be the most common colonizing organisms in the present study. Similar pattern have been reported by different authors as Kabir O. et al [10] (2009) 42.70% and Jayalakshmi J. et al [8] (2008)47.16% Though MRSA was in a small percentage (6.5 %), is a cause for concern. This represents an additional route for cross transmission.

Infection control guidelines must target use of suitable disinfectants to avoid mobile phone contamination, and advocate hand-wash prior to and after mobile phone usage. Policy makers of individual healthcare facilities should formulate specific protocols for restricted use of mobile phones in sensitive patient care areas and make recommendations for periodic disinfection. Lack of awareness regarding the possibility of mobile phone contamination occurring in their grooves and keys (though they appear to be clean and shiny) suggest the need for creating awareness and ensuring hygienic practices in its handling.

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