

## ORIGINAL RESEARCH ARTICLE

### ARE PERSONAL ACCESSORIES SAFE IN HOSPITAL SETTINGS?

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#### ABSTRACT

The main goal of this study was to find out whether personal accessories of Health Care Workers (HCWs) harbored microbes which would inhibit good hand hygiene, and would act as breeding grounds for various disease causing microorganisms. Twenty six culture swabs were taken from the bangles, watches and rings of HCWs. We observed the growth of micrococcus species and coagulase negative staphylococci in 50 % of the samples. Of the positive bacterial growth, 45.5% were in bangles, 60% in watches and 40% in rings. Health Care workers have solemn responsibility to safeguard their patients as well as themselves by complying with good hand hygiene compliance by not wearing these accessories during direct patient contact and washing their hands according to WHO Hand Hygiene guidelines.

**Key Words:** Hand hygiene, Healthcare Workers, Microbes, Personal accessories.

#### INTRODUCTION

Bangle, wrist watch, rings and cell phone are the common accessories worn or carried by healthcare workers in hospital settings. Personal accessories inhibit good hand hygiene, may reduce our grip or speed while doing various manipulations, may tear or puncture gloves, may interfere with putting on glove, can become caught in beddings, dressings and even machinery. Personal accessories are a breeding ground for various disease causing microorganisms and fungi.<sup>1</sup>

Higher Bacterial colonization is seen on the hands of healthcare worker with rings and other accessories, than one without. Rings may interfere with thorough hand washing. They may cause gloves to tear. Wearing a single ring or a simple band found to be much less dangerous than wearing multiple rings or large rings with multiple stones or detailed scrollwork.<sup>2,3</sup> Elaborate hand jewelry, bracelets or bangles are known to interfere with active patient intervention. The HCWs who took off their rings/ jewelry just before a surgical procedure had higher bacterial counts than those who did not wear any accessories (Control) even after hand scrub.<sup>4,5,6</sup>

The occurrence and undesirable complications from healthcare-associated infections (HAIs) have been well recognized in the literature for last several decades. The occurrence of nosocomial infection continues to increase at an alarming rate.<sup>7,8</sup> Transmission of infection through contaminated HCWs' hands is the most common pattern observed in most settings. <sup>9</sup> Randomized controlled trials have already highlighted increased deposit of microorganisms under rings and long nails with the risk of cross-transmitting pathogens during hospital.<sup>10,11</sup> Therefore,

we have aimed to conduct this study with an objective to get a better understanding of why healthcare workers must not exhibit poor personal hygiene like wearing stoned rings, bracelets, wrist watches or wear any kind of accessories if they are involved with direct patient care and apply the knowledge gained to inform colleagues who might still be wearing excessive jewelry or have long nails.

#### MATERIAL AND METHODS

A cross sectional study was conducted from 30 September 2013 to 3 October 2013 at Chitwan Medical College Teaching Hospital (CMCTH). Twenty six accessories (11 Bangles, 10 Wrist Watches and 5 Rings) from 8 Ward attenders, 9 Nurses and 9 doctors were examined for the presence of bacteria. The swabs were taken from the accessories, transported to microbiology laboratory of CMCTH, cultured in blood agar, nutrient agar, Mac Conkey agar (one plate each) and incubated at 37°C till 48 hour. Identification of the growth was done by standard microbiological methods.<sup>12</sup>

Ethical Clearance was taken from Chitwan Medical College Institutional Review Committee (Ref: CMC-IRC – 59, 28-September, 2013) and Verbal informed consent was taken from the participants before collection of the samples.

#### RESULTS

Following observations were noted. Overall 50% of accessories harbored microbes among which 45.5% on Bangles, 60 % on wrist watches and 40% on rings. (Table 1) About 85 percentages were micrococci and 15% were Coagulase Negative Staphylococci.(Table 2)

**Table 1: Distribution of bacterial growth on the different accessories**

Accessories	Presence of Growth		Total (n=26)
	Yes	No	
	Frequency (%)	Frequency (%)	
Bangle	5(45.45)	6(54.54)	11
Watch	6(60)	4(40)	10
Ring	2(40)	3(60)	5
Total	13(50)	13(50)	26 (100)

**Table 2: Types of pathogens observed**

Types of Organism	Watches	Bangles	Rings	Total (%) [n=13]
Micrococci	5	5	1	11(84.6)
Staphylococci	1	0	1	2(15.4)

## DISCUSSION

In the present study, two important groups of bacteria were isolated from 50% of the personal accessories: Micrococcus and coagulase negative Staphylococci.

Micrococcus spp. and closely related genera though considered harmless saprophytes that inhabit or contaminate the skin, mucosa, and oropharynx; however, they can be opportunistic pathogens for the immunocompromised people.<sup>13</sup> They have been associated with various infections, including bacteremia, continuous ambulatory peritoneal dialysis peritonitis, and infections associated with ventricular shunts and central venous catheters. They have also been isolated from blood and surgical specimens in some patients with coronary and infectious conditions. *M. luteus* has been reported as the causative agent in cases of intracranial abscesses, pneumonia, septic arthritis, endocarditis, and meningitis.<sup>14,15</sup>

Coagulase-negative staphylococci are by far the most common cause of bacteremia related to indwelling devices. Most of these infections are hospital-acquired, and studies over the past several years suggest that they are often caused by strains that are transmitted among hospitalized patients.<sup>16</sup> Other important infections due to coagulase-negative staphylococci include central nervous system shunt infections, native or prosthetic valve endocarditis, urinary tract infections, and endophthalmitis. Intravenous treatment of systemic infections is usually required because coagulase-negative staphylococci have become increasingly resistant to multiple antibiotics.<sup>16,17</sup>

Neonates, post-surgical patients, patients on dialysis and immunocompromised patients, ICU patients are at most risk to acquire the infections.<sup>13</sup> It became evident from our study that

healthcare workers wearing bangles, watch and rings can harbor the pathogenic organisms which would be responsible for HAIs. Therefore, they should not wear those items or other accessories if they are involved with direct patient care and should apply the knowledge gained to inform their colleagues who might still be wearing excessive jewelry or have long nails.

Moreover, hand washing plays crucial role in preventing the spread of disease and it should be highlighted. Hands must be washed for at least 20-25 seconds. Even intact skin of patients and healthcare workers can be colonized with disease causing bacteria.<sup>18</sup> Five moments of Hand wash according to WHO, must be remembered: after and before patient contact, before aseptic task after body fluid exposure, after patient contact and after contact with patient's surroundings.<sup>18</sup>

There were some limitations in this study. The sample size was low as it was a preliminary pilot study. Characterization of the isolated bacteria and identification of anaerobic organisms were not performed in this study.

## CONCLUSION

Personal accessories can harbor and act as vehicles for transfer of potential pathogens which may be associated with health care associated or nosocomial infection. The HCWs must exhibit good personal hygiene and not wear or carry personal accessories during direct Patient care.

## ACKNOWLEDGEMENT

We would like to take the opportunity to thank all the staff of Chitwan Medical College Teaching Hospital involved in conducting the study and Chairman & Managing Director, Prof Dr Harish Chandra Neupane for support and encouragement for research activity at CMC.

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