

6th International Congress on

Bacteriology & Infectious Diseases

May 21-22, 2018 | New York, USA

Detection of bacterial pathogens in hands of rural school children across different age groups and emphasizing the importance of handwash

Rohit Vishwanath

Chettinad Hospital and Research Institute, India

Introduction: Contaminated hands are the most important cause for infections in children. Diarrhea and Pneumonia are the two important diseases that cause high mortality rate in children. Several studies reveal the fact that hands of the children are the frequent source of pathogens. Therefore, this study was aimed to assess the relationship between the bacterial load sampled from the hands of school children and their routine hand wash practice methods.

Methodology: A total of 200 rural school children belonging to the age group 7 to 15 were selected. They were divided into two age groups 7 to 10 and 11 to 15. Wet swabs were taken from both the hands of the children and transported to the laboratory in Amie's transport medium. It was inoculated in blood agar & MacConkey agar and incubated at 37°C for 24 hrs. Bacterial identification was done using standard microbiological procedures. Questionnaires were obtained regarding the handwashing practices of the children.

Results: More than 95% of the children harbored commensals like CoNS and Aerobic spore formers. Other pathogenic bacteria isolated include *Acinetobacter species* (36.5 %), *Pseudomonas species* 4% (15), *Enterococcus species* (2%), *Klebsiella species* (3.5%), *Flavobacterium species* (1.7%), *Escherichia coli* (2%), and *Enterobacter species* (0.75%). The male children harbored more bacteria in their hands when compared to female population. *Acinetobacter species* were found to be predominant in the left hand. Other Gram negative bacteria like *Enterobacter species*, *Escherichia coli*, *Pseudomonas species* and *Flavobacterium species* were found to be slightly higher in the right hand. Bacterial population like *Pseudomonas species*, *Klebsiella species* and *Enterococcus species* were predominant in the hands of children belonging to 7-10 years, whereas *Acinetobacter species*, *Escherichia coli* and *Flavobacterium species* were slightly higher among 11-15 years of age. This information corresponds to the poor hand washing practices among the children though 80 to 90% of the children were aware of the importance of handwashing. This clearly underscores the fact from the questionnaire that nearly 90% of the children belonging to both age groups skip handwashing as the wash sink is placed in distant locations.

Conclusion: It can thus be concluded from our study that simple handwashing practices can efficiently reduce the transmission of pathogenic bacteria and infection. Lack of a proper hand washing model, hand washing material and hand wash sinks at distant locations were a few of the reasons for failure of handwashing practice in schools. Provision of these materials can bridge the gap between proper hand washing techniques and the prevention of spread of infection.

Biography

Mr. Rohit Vishwanath is currently pursuing his 3rd year medicine undergraduate degree in Chettinad Hospital and Research Institute, Chennai, India. He has received two ICMR STS (Indian Council of Medical Research – Short Term Studentship) awards consecutively for the years 2016 and 2017 in Physiology and Microbiology respectively. He is also the recipient of the Dr. Leela Krishnamurti award for the best undergraduate research paper awarded by the Indian Association of Biomedical Scientists. His topics of interest in research include stress studies, sleep studies, studies involving cognitive functions, infectious diseases studies and epidemiological studies.

rvrohit1997@gmail.com

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