

**MICROBIAL STUDY OF HOSPITAL ENVIRONMENT
AND CARRIER PATTERN STUDY AMONG STAFF IN
NEPAL MEDICAL COLLEGE TEACHING HOSPITAL**

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**BY
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This is to certify that **Miss Jyoti Pant** has completed this dissertation work entitled **“MICROBIAL STUDY OF HOSPITAL ENVIRONMENT AND CARRIER PATTERN STUDY AMONG STAFF IN NEPAL MEDICAL COLLEGE TEACHING HOSPITAL”** as a partial fulfillment of Master of Science Degree in Microbiology under our supervision. To our knowledge, this work has not been submitted for any other degree.

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ABSTRACT

The present study was conducted during a period of 11 months (September 2005 to July 2006) to study the occurrence of microorganisms in environmental (air and surface) samples from different wards of Nepal Medical College Teaching Hospital (NMCTH) and also to study the carrier pattern among the staffs working in the hospital. Random microbiological study was done. Altogether 203 environment samples: 86 air samples and 117 surface samples from different wards. Similarly 150 samples from the personnels working in the hospital: 48 for nasal, 48 for throat and 54 for hand carrier detection were collected and studied.

Gram positive cocci were the most predominant ones among the bacterial isolates from the environment followed by gram positive bacilli and then gram negative bacilli. Coagulase negative staphylococci were the most predominant bacteria followed by *Staphylococcus aureus*, *Micrococcus* spp., *Streptococcus* spp., *Bacillus* spp., and gram negative rods. Various gram negative rods isolated in the order of frequency are *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella* spp. and *Citrobacter* spp. Most of the isolates showed resistance to amoxicillin followed by erythromycin. Out of 182 environmental isolates of *S. aureus*, 1.6% was resistant to methicillin. Among fungal isolates yeast were the most common isolates while *Aspergillus* spp. were the most frequently occurring mold. Out of 150 samples collected for the study of carrier pattern, 32 out of 54 samples collected were found to have *S. aureus* in their hands, 1 had *E. coli*. Other isolates from the hands were *Bacillus* spp., *Streptococcus pneumoniae*, Micrococci and CoNS. Similarly out of 48 nasal samples, *S. aureus* was isolated from 21 (43.8%) samples and 14 of these also had *S. aureus* in their hands. Among 53 isolates of *S. aureus* from the hands and nose of the staffs, 5.7% were resistant to methicillin. None of the staffs were found to have beta hemolytic streptococci in their throat.

Key words: environment, carrier, staffs, hospital, isolates

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
ATCC	American Type Culture Control
BA	Blood Agar
BHI	Brain-Heart Infusion
CDC	Centre for Disease Control
CoNS	Coagulase Negative <i>Staphylococcus</i>
CSF	Cerebrospinal Fluid
ESBL	Extended Spectrum Beta Lactamase
HAI	Hospital Acquired Infection
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
LI	Labour In
LW	Labour Waiting
MA	MacConkey Agar
MAC	<i>Mycobacterium avium</i> Complex
mcg	Micro-gram
MDR	Multi-Drug Resistant
MMWR	Morbidity Mortality Weekly Report
MRSA	Methicillin Resistant <i>Staphylococcus aureus</i>
MSA	Mannitol Salt Agar
NA	Nutrient Agar
NCCLS	National Committee for Clinical Laboratory Standard
NI	Nosocomial Infection
NICU	Neonatal Intensive Care Unit
NICUM	Neonatal Intensive Care Unit for Mothers
NMCTH	Nepal Medical College Teaching Hospital
NNIS	National Nosocomial Infection Surveillance
OT	Operation Theatre
PNC	Post Natal Care
POW	Post Operative Ward
TUTH	Tribhuvan University Teaching Hospital
UK	United Kingdom
USA	United States of America
UTI	Urinary Tract Infection
VRE	Vancomycin Resistant Enterococci
WHO	World Health Organization

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