6. SUMMARY AND CONCLUSION
SUMMARY AND CONCLUSION

This study was carried out at the Department of Microbiology and Biotechnology Karnataka University, Dharwad. The bacterial strains were collected from various clinical samples like urine, infected blood, pus, wound swabs, catheters and cerebrospinal fluid (CSF) from different inpatients of Karnataka Institute of Medical sciences (KIMS), Civil Hospital, and local hospitals and Nursing Homes of Hubli-Dharwad. One thousand fifty individuals were included in the study, seven hundred and fifty males, and three hundred females.

For isolation and identification of *Staphylococcus aureus* the samples were inoculated on nutrient agar and selective medium, mannitol salt agar (MSA). The characteristic colonies producing golden yellow or cream, round, raised regular colonies on nutrient agar and yellow coloration around MSA were presumptively selected as total of 675 Staphylococcus isolates were procured. These isolates were subjected for cultural, microscopical and biochemical analysis for confirmation. A total of 856 (81.56%) Staphylococcal isolates were phenotypically confirmed as *Staphylococcus aureus* and were used for further investigations.

All the *S. aureus* obtained were screened for methicillin and vancomycin resistance using phenotypic methods like disc diffusion method. 436 isolates were further subjected to antibiotic susceptibility testing using Kirby- Bauers disc diffusion method. 14 VRSA isolates were chosen for the detection of van A, B and C
genes from clinical samples using PCR and already published oligonucleotide primers.

The following are the important findings in the present study

The overall distribution rate of staphylococci was 91.90%. The highest distribution rate was observed in anterior nares followed by that in dorsum of palm and forearm. However, the highest distribution rate in clinical samples was in urine followed by blood, pus, sputum and CSF.

The maximum number of *Staphylococcus aureus* obtained in the samples collected from the age group between 31-40 years and the lowest isolation rate was seen in the age group of < 18 years.

The overall isolation rate of MRSA among *Staphylococcus aureus* isolates was found to be 50.93%. *Staphylococcus aureus* isolates distribution rate of MRSA was highest in blood followed by pus, sputum, urine, CSF, and forearm. The incidence of MSSA from the various samples was 49.07%.

The overall isolation rate VRSA among *Staphylococcus aureus* isolates were found to be 1.63% and the distribution of VRSA was highest in pus.

The highest rate distribution of *Staphylococcus aureus* nasal carriage among clinical samples was seen among the adults, followed by children.

The highest rate distribution of *Staphylococcus aureus* nasal carriage among hospital personnel was seen among the nurses followed by attenders and doctors.
The distribution rate of *Staphylococcus aureus* major carriage among the healthy individuals was showed the highest rate of *Staphylococcus aureus* was in adults followed by children.

The results obtained from the antibiogram for 380 isolates from infected blood, pus, urine and sputum against 14 different antibiotics belongs to different class of antibiotics showed the increase in rate of resistance against the antibiotics.

The examination of the strains with primers for the van A, B and C genes revealed that 4 VRSA strains in this study were vancomycin-resistant because of the presence of van A gene, only one showed van B gene but van C gene could not be detected in the isolates of VRSA strains.

The present study demonstrates for the first time emergence of VRSA from this part of the country and indicates the prevalence of the antibiotic resistance. Vancomycin resistance in *Staphylococcal* species is beginning to emerge as a clinical threat, yet the attention it has received and serves to underscore the seriousness of the problem. A better understanding of these issues will be a key to helping the prevention and treatment of these infections in the future. The heightened awareness of the issues and strict adherence to current guidelines for vancomycin use and infection control practices may help limit the impact of these organisms.

Therefore, regular surveillance of hospital-associated infections including monitoring of antimicrobial (especially Vancomycin and other newer glycopeptides) susceptibility pattern of MRSA and formulation of a definite antimicrobial policy may be helpful for reducing the incidence of these infections.

178
Infected or colonized patients may be isolated in a single room or isolation unit to prevent the spread of MRSA. Knowledge about MRSA and carrier status needs to be raised among the health staff of the hospital and control measures need to be implemented consistently in order to reduce the burden of MRSA and VRSA infection in the hospital environment.