Background

• Methicillin resistant Staphylococcus aureus (MRSA) is one of the agents which cause largest outbreaks of hospital-acquired infections worldwide.
• Infections with methicillin resistant strains have been frequently associated with treatment failure and increased severity of disease.
• MRSA causes mortality twice times more than Methicillin-Susceptible Staphylococcus aureus 1.
• It is highly transmissible and carriage of health care professionals (HCP) is one of the major factors causing infections that may even lead to death in susceptible patients.

Objectives

• The aim of this research is to demonstrate the prevalence of nasal MRSA carriage of nurses working in private and state hospitals of Northern Cyprus.
• The nurses working in State hospitals were expected to have higher rates of carriage than the ones working in private hospitals due to higher workload.
• It was also expected that older nurses and the nurses that worked for longer period of times would have a higher nasal colonization rates of MRSA.
• Our research carries the significance of being the first study done about this important topic in Northern Cyprus.

Methods

• Before starting the study our research was approved by the Ethical Board of EMU and the Deanery.
• A request letter was sent to the Ministry of Health to have permission to take samples from state hospitals, and a similar request was also sent to the private hospitals. Upon receiving acceptance, the study was initiated.
• This study was conducted over a period of 2 months which started on 4th of March, 2016 and ended on 6th of May, 2016.
• The study was a cross-sectional study with stratified sampling method in which all nurses available were selected from 2 state and 2 private hospitals.
• Nasal samples were taken from a total of 78 nurses from different departments in the state and private hospitals.
• Nasal samples were taken with usual swabbed liquid media (Brain Hearth Infusion Broth) and cultivated overnight at 37°C in the Microbiology laboratory of Dr. Fazil Küçük Faculty of Medicine. Cefoxitin (4 ug/mL) added Mueller Hinton Agar (CMHA) media were used to differentiate MRSA from other possible pathogens.
• All material preparation, sample collection and inoculation steps were made by taking maximum precautions to avoid contamination and infection of the specimens and causing misconception of data.
• In the last step of analyzing phase; after entering all observed data from the questionnaires and laboratory tests to SPSS the percentages of MRSA carriages and their prevalence to some determinative factors that asked in questionnaire was calculated by using data analysis techniques. Crosstabs and Chi-square tests were used to see the significance of data.

Results

1. Nasal MRSA carriage rates were found as follows:

   • Satate Hospital
     63,6% Carriers
     36,4% Not Carriers
   • Private Hospital
     43,5% Carriers
     56,5% Not Carriers

2. Number of patients that nurses contact in a day was found as follows:

   • State Hospitals:
     56,4%, 520 patients
     43,6%, 470 patients
   • Private Hospitals:
     69,9%, 520 patients

3. Hand washing patterns are found as follows:

   • State Hospitals:
     9,1% washes hands only before the 1st patient of the day.
     63,6% washes hands before & after each patient.
     7,3% washes hands only after the last patient of the day.
   • Private Hospitals:
     4,3% washes hands only before the 1st patient of the day.
     74% washes hands before & after each patient.
     21,7% washes hands only after the last patient of the day.

4. It was found out that:

   • 42,9% of General Service,
   • 30% of Surgery,
   • 66,7% of other Services.

   Nurses were MRSA carriers.

5. When assessing ages of the nurses and working years results shows that:

   • Age plus working year is directly proportional to MRSA carriage.
   • Nurses aging older then 35, have a significantly higher percentage of MRSA carriage (70%) then nurses aged 35 and lower (44,7%), p=0,024.
   • Nurses who have been working in hospitals more then 15 years have a significantly higher percentage of MRSA carriage (75%), then the nurses who have been working for 15 years or less.

Conclusion

• The rate for the nasal MRSA carriage among nurses was one of the highest rate (57.7%) reported in nurses to date as the rate of nasal MRSA carriage is varying in a range of 3.2-10.5% in such countries. The high rate of MRSA carriage among nurses in N.Cyprus should be urgently taken into measure as the nurses are the most important route for MRSA transmission.
• Moreover, 67.9% of the nurses of which 54.7% were identified as carriers had no knowledge about MRSA. Nurses who stated that they have information about this problem were found to be carriers with a rate of 64%, (p=0,43). The most important reason for this emerging rate of MRSA carriage is due to low knowledge of nurses about the MRSA precaution and lack of infection control strategies.
• There was a significant increase of nasal MRSA carriage as nurses work and get older. Ongoing education in MRSA prevention should be provided to nurses including an evaluation of sufficient knowledge and skills to come to a better point.

References

1. NARP. Northern Antibiotic Resistance Partnership. What is MRSA and what is its importance?
2. MRSA among healthcare workers in non-outbreak settings in Europe and the United States: a systematic review Madeleine Dulon*, Cristina Varas, Ana Schablon and Albert Nienhaus