

Knowledge, Attitude and Practices Related to MRSA among BSc Nursing Students Who Attend Clinical Training at Teaching Hospital Karapitiya

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Abstract: *Methicillin Resistant Staphylococcus aureus (MRSA) is resistant to all β lactam antibiotics and it can cause small abscess to life threatening sepsis or endocarditis. The risks of death in MRSA patients were three times greater than other nosocomial infections. Student nurses are tomorrow's staff nurses and without proper knowledge about MRSA, they may be vulnerable to MRSA infection and dissemination. The objective of this paper is to evaluate knowledge, attitudes and practices related to MRSA among BSc nursing students. A descriptive cross-sectional study was conducted among 134 BSc nursing students. Overall knowledge related to MRSA of the most students (65.7%) were not satisfactory, (the mean was 9.5 ± 5.277 out of 20). The majority of students had a satisfactory level of knowledge ($P=0.000$) with increased exposure to clinical training. Most of the students (90.3%) have good caring attitude towards MRSA positive patients (mean, 24.68 ± 2.90 ; $n=30$). Further, significantly good attitudes were observed among students with the unsatisfied overall knowledge ($P=0.033$). Majority of the students learned about MRSA from hospital staff and the other possible sources were textbooks, clinical practice and internet. The gaps in knowledge must be filled with necessary interventions such as incorporation of introduce lectures on MRSA to the curriculum, motivation of the students for self-learning through tutorials and case studies and to provide books, journals and materials on MRSA as demanded by the majority of nursing students. Before the commencement of clinical training the students should be provided with adequate knowledge related to MRSA.*

Keywords— MRSA, Knowledge, Attitudes

I. INTRODUCTION

Sir Alexander Ogston is the Scottish surgeon who first showed in 1880 that, the number of pyogenic diseases in humans was associated with the cluster forming microorganism. He introduced the name '*Staphylococcus*'. In Greek, the words *Staphyle* means bunch of grapes and *kokkos* means grain or berry. It is a gram positive bacterium. They may live as the part of the normal flora of the skin and the mucus membranes of humans as well

as animals. The most virulent species of staphylococcus are *Staphylococcus aureus*. (Harvey, Champe and Fisher, 2007) There are many ways of transmission of infection. It can be transmitted via physical contact with someone who is either infected or a carrier. *Staphylococci* are resistant to heat and drying so that can persist for long periods on fomites (inanimate objects) which can serve as reservoirs. As well as MRSA can transmit by airborne droplets of the infected patient, especially when the patient coughs or sneezes. (Karunaratne, et al., 2005) *Staphylococcus aureus* diseases are results of infection, intoxication or both. It can cause small abscess to life threatening endocarditis or even sepsis. (Include Reference) *Staphylococci* infected patients should be treated with relevant antibiotics guided by an antibiotic sensitivity test. They are sensitive to many antimicrobial agents such as Penicillin, Cephalosporin, Tetracycline, Carbapenems, Aminoglycosides and Macrolides. Drug of choice was benzyl penicillin. But, some *Staphylococcus aureus* strains achieved resistance to penicillin. Methicillin was used as the drug of choice to treat infections caused by *Staphylococcus aureus* strains which were resistant to penicillin. But it became a "super bug" not only resistant to Methicillin but also all β lactam antibiotics such as Cloxacillin, Co-amoxiclav, Cephalosporins, Carbapenems etc.

MRSA stands for Methicillin Resistant *Staphylococcus aureus*. Outbreaks of MRSA were reported in the early 1960s. Since that time MRSA has spread worldwide. The prevalence of MRSA has increased in both healthcare and community settings. As an example, the prevalence of methicillin-resistance among *S. aureus* isolates in intensive care units in the United States is 60%, more than 90,000 invasive infections occurred due to MRSA and 19,000 people per year have died from MRSA in the United States in 2005. (Klevens, et al., 2007)

Current therapeutic treatment for MRSA infections is limited to very few expensive and potentially toxic drugs such as Vancomycin, Linezolid, Tigecycline, Quinupristin/Dalfopristin and Daptomycin. But, some

strains of MRSA have been reported to resistance to some of these drugs such as Vancomycin (Kumar and Clark, 2011) The world must fight against the antimicrobial resistance; if not, antimicrobial resistance will increasingly threaten to send the world back to a pre-antibiotic age. Today, MRSA is pandemic, causing infection in thousands of hospital patients and healthy individuals worldwide each year. The risk of death in MRSA patients was three times greater than other nosocomial infections. MRSA increase the length of hospital stay and the health cost of the patient (Klevens, 2007).

Patients, hospital staff and the inanimate objects are the main reservoirs of MRSA in hospitals. (Include Reference) So hospital staff members (healthcare professionals) are potential disseminators of MRSA infection among patients.(Greenwood, Slack and Peutherer, 2007). When considering health professionals, nursing students get exposed to patients with MRSA infections similar to doctors and nurses, when performing nursing procedures. Student nurses are tomorrow's staff nurses. A study conducted in Sri Lanka, revealed that the prevalence of MRSA carrier rate in the nose of the healthy nursing students was found to be far higher than the healthy Medical students: 42.1 % and 9.5 %, respectively. (Shanmugam, 2009) The nurses with good knowledge about MRSA and good attitudes towards the MRSA patients will help to protect themselves and to prevent the nosocomial spread of MRSA. It provides a good rationale for the study. It is vital to evaluate the current Knowledge, attitude and practices related to MRSA among nursing students before taking appropriate action to uplift their knowledge.

II.METHODOLOGY

A descriptive cross-sectional study was conducted among 134 BSc nursing students, University of Ruhuna. Self-administered structured questionnaire was used to collect the data. The study sample consisted of all BSc nursing students who consented to participate. Data was analyzed by using Microsoft Office Excel 2010 and Statistical Package Social Science (SPSS version 17.0).

The pre-test was done with the questionnaire by using 16 BSc nursing students (4 students from each academic year, both male and female). They were not included in the main study.

III. RESULTS

There were 134 BSc nursing students participated in the study. Among the participants 33 (24.6%) were male and 101 (75.4%) were females. There were 37 (27.6%) 1st year students, 42 (31.3%) 2nd year students, 31 (23.1%) 3rd year students and 24 (17.9%) 4th year students participated in the study.

Students were assessed regarding manifestations, susceptibility, MRSA carriage, mode of transmission, investigations and diagnostic criteria, treatment for the MRSA positive patients and prevention of the spread as basic knowledge. Further, their knowledge on practices related to MRSA regarding collection specimens for investigation, eradication protocol, which is followed by the hospital, universal precautions to prevent spread, control outbreaks and the treatment were assessed.

Basic knowledge and the knowledge related to practices together were considered as the overall knowledge related to MRSA. The mean overall knowledge of BSc nursing students was 9.50 ± 5.27 and the median was 10.

Nursing students deal with the lives of the patients, so that they must have proper knowledge and understanding. So I assumed that a score of more than 65% as satisfactory and a score less than 65% were unsatisfactory. According to that, overall knowledge of the 46 (34.3%) students was satisfactory and 88 (65.7%) students were unsatisfactory.

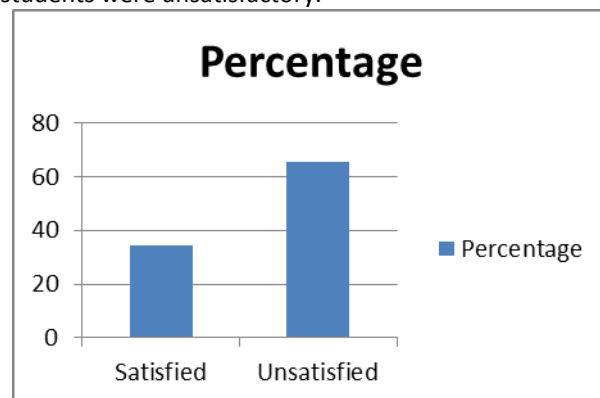


Figure 1 – Percentages of the overall Knowledge of the students' related to MRSA

The majority of the students reached satisfactory level of knowledge (Chi- Square value- 54.218, P=0. 000) with increased exposure to clinical training. Clinical exposure increases with advancing academic year and according to the findings most of the students gathered knowledge on MRSA from their clinical attachment.

All healthcare professionals must have a good attitude towards MRSA infected patients in order to provide good care for them. Most of the students (121, 90.3%) have a good caring attitude towards the MRSA positive patients and the mean was 24.68 ± 2.903 out of 30.

Table 1 - Attitudes of the students towards the MRSA patients.

Attitudes of the students	Number of students	Percentage %
Good	121	90.3
Poor	13	9.7
	134	100

Among the BSc nursing students, the attitudes were good in 45 (33.58%) who scored satisfactory overall knowledge and 76 (56.72%) students who scored unsatisfactory overall knowledge. The attitudes were poor in 1 (0.75%) student who was scored satisfactory and 12 (8.95%) students who were scored unsatisfactory overall knowledge.

Significantly good attitudes were observed students with the unsatisfactory overall knowledge (Chi-square value-4.531, P=0.033).

Table 2 – Comparison of the overall knowledge and the attitudes towards MRSA patients

		Attitudes towards MRSA patients	
		Good	Poor
Overall knowledge of the students	Satisfactory	45	1
	Unsatisfactory	76	12

There are many sources which the BSc nursing students can gather knowledge about MRSA. I emphasized some of the sources such as lectures in the curriculum, textbooks, Hospital staff, practice and others.

Eighteen (9.57%) students gathered knowledge from lectures in the curriculum, 38 (20.21%) students gathered knowledge from the textbooks, 77 (40.96%) learned from

the hospital staff, 40 (21.28%) students gained knowledge from their clinical practice at the hospital. Fifteen (7.98%) students gathered knowledge from sources other than the above mentioned such as internet, senior students, lecturers, community program, journals etc.

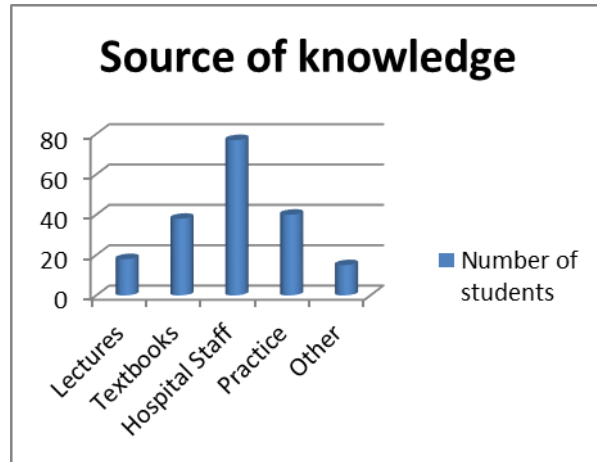


Figure 2 - Distribution of the source of knowledge

The study questionnaire contained 2 questions (I must have a good knowledge about MRSA and the nursing curriculum should provide knowledge about MRSA) to assess the need of knowledge on MRSA.

There was a high demand for the knowledge of MRSA among the students. Hundred and one (75.38%) students agreed, 10 (7.46%) students gave neutral and 23 (17.16%) students disagreed with the statement that they must have a good knowledge about MRSA. As well as 116 (86.57%) students agreed, 8 (5.97%) students gave neutral and 10 (7.46%) students disagreed with the statement that the nursing curriculum should provide knowledge about MRSA.

IV. DISCUSSION AND CONCLUSION

The study revealed that the overall knowledge related to MRSA of most BSc nursing students were not satisfactory and there were knowledge gaps in the majority of the students. A similar survey indicated that nursing students had a knowledge deficit regarding MRSA. Nursing student's need specific MRSA content in the nursing curriculum and need role models in healthcare settings who are following infection control guidelines. (Sanders and Jury, 2010) But, BSc nursing curriculum does not contain any lesson about the MRSA. It could be a reason for the knowledge gaps in the majority of the students. The gaps in knowledge must be filled to prevent students

from being colonized, infected and becoming a source of dissemination among patients.

The majority of BSc nursing students demanded that they must have a good knowledge related to MRSA and the nursing curriculum should provide knowledge about MRSA. Implementing further studies among nursing students on MRSA would be helpful to confirm the findings and surveys should be conducted to measure the MRSA prevalence in nursing students.

The knowledge gaps should be filled with necessary interventions such as inclusion of lectures on MRSA in the nursing curriculum, arranging case discussions in clinical settings, motivating the students for self-learning through tutorials and case studies and providing books, journals and materials on MRSA to the library. Additionally, teaching programs, seminars, poster presentations and leaflets on MRSA would be helpful to fill the gaps in knowledge.

The majority of the students reached satisfactory level of knowledge with increased exposure to clinical training. Clinical exposure increases with advancing academic year and according to the findings most of the students gathered knowledge on MRSA from their clinical attachment. Nevertheless, BSc nursing students start their clinical training from the 1st year. They also perform nursing procedure and have contact with the patients. Student nurses without proper knowledge about MRSA are vulnerable to MRSA infection, colonization and the dissemination of the organism. Therefore, before clinical training starts the students should be provided adequate knowledge related to MRSA.

All healthcare professionals must have a good attitude towards MRSA infected patients in order to give good care to them. According to the results majority of the BSc nursing students have a good caring attitude towards the MRSA positive patients. The students should be encouraged to further their studies on MRSA and be role models to others who had poor attitudes.

Significantly good attitudes were observed in students with the unsatisfactory overall knowledge. The students with good knowledge about the MRSA are more prone to avoid the patient and try to prevent from getting infected because of the risk of MRSA to them and their family. It may be the cause for poor attitudes of the students with good knowledge on MRSA. (Cassidy, et al., 2010)

The majority of the students learned about MRSA from the hospital staff. Other possible sources were textbooks, clinical practice in the hospital, lectures in the curriculum, internet, senior students, lecturers, community program and journals etc.

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