(RESEARCH ARTICLE)

Knowledge regarding Methicillin Resistant *Staphylococcus aureus* (MRSA) among Nurses of Selected Hospital of Kathmandu, Nepal

Moonu Shrestha [1, *], Soniya Rai [2] and Kritisha Prajapati [3]

[1] Everest College of Nursing, Purbanchal University Kathmandu Nepal.
[2] Silverline Hospital, Emergency Department, Kathmandu, Nepal.
[3] Sakshyam Health Care and Rehabilitation Centre, Bhaktapur, Nepal.

Abstract

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a group of gram-positive bacteria that are genetically distinct from other strains of *Staphylococcus aureus*. MRSA is responsible for several difficult-to-treat infections in humans.

Objectives: To assess the knowledge regarding Methicillin Resistant *Staphylococcus aureus* (MRSA) among nurses of selected hospital of Kathmandu.

Methodology: A descriptive cross-sectional design was used. Fourty one nurses from Stupa Community Hospital were selected using enumerative sampling. A self-administered structured questionnaire was used to assess the knowledge level. Data analysis was conducted using SPSS v25, employing descriptive and inferential statistics.

Results: The majority of respondents (53.7%) demonstrated a high level of knowledge, while 19.5% had a moderate level, and 26.8% showed a low level of knowledge. This indicates that over half of the participants were well-informed about MRSA, though a notable portion still had limited understanding, highlighting the need for continued education and awareness efforts.

Conclusion: More than half of the respondents had adequate knowledge regarding MRSA, though a notable portion still had limited understanding, highlighting the need for continued education and awareness efforts

Keywords: Knowledge; Nurses; Methicillin-resistant *Staphylococcus aureus*

1. Introduction

MRSA infection is one of the leading causes of hospital-acquired infections and is commonly associated with significant morbidity, mortality, length of stay, and cost burden. MRSA infections can be further divided into hospital-associated (HA-MRSA) infections and community-associated (CA-MRSA) infections[1].

Antimicrobial resistance is a major global health concern, and, of the Gram-positive bacteria, drug-resistant *Staphylococcus aureus* is a serious threat. S. aureus causes a wide range of infections commonly involving the skin, soft tissue, bone, joints, and infections associated with indwelling catheters or prosthetic devices[2].

---

* Corresponding author: Moonu Shrestha

Worldwide, an estimated 2 billion people carry some form of S. aureus; of these, up to 53 million (2.7% of carriers) are thought to carry MRSA. S. aureus was identified as one of the six leading pathogens for deaths associated with resistance in 2019 and 100,000 deaths caused by MRSA were attributable to antimicrobial resistance[3].

It is estimated that in about 164,717 participants from 29 countries the global prevalence of MRSA (Methicillin Resistant *Staphylococcus aureus*) is 14.69%. United states of America had the highest prevalence at 22.27%, followed by the Western Pacific at 16.57%, Europe at 10.93%, the Eastern Mediterranean at 8.55%, and Africa at 9.04%[4].

In context of Nepal prevalence of *Staphylococcus aureus* among clinical isolates is 34.5%. On average, the proportion of multi-drug resistance in *Staphylococcus aureus* is 57.1%. Methicillin-resistant *Staphylococcus aureus* accounts for a total of 41.7%[5].

The pooled prevalence of MRSA infections in Nepal among 5951 confirmed S. aureus isolates was 38.2% (95% CI, 31.4%–45.2%). It found a significant heterogeneity (I2 = 96.7% for resistance proportion), and no evidence of publication bias (p = 0.256) among studies. MRSA strains showed a high level of resistance to beta-lactam antibiotics and the highest susceptibility profile was noted in vancomycin 98.0% followed by chloramphenicol 91.0%[6].

A descriptive exploratory research design was conduct on 70 nurses at Mansoura University child hospital in Egypt to assess nurses' knowledge related to MRSA. Data were collected using nurses' knowledge assessment questionnaire. Results shows most of nurses obtained unsatisfactory knowledge concerning MRSA (74.3 %)[7].

A descriptive cross-sectional study was conducted on 40 nurses at selected hospital of Thrissur, India to assess the level of knowledge regarding MRSA among nurses. A sample of 40 nurses were selected by simple random sampling technique and a self-administered structured questionnaire was used for data collection. The result shows among nurses 47.5 % have moderate level of knowledge, 50 % of them have inadequate knowledge, 2.5 % have poor knowledge and none of them have adequate knowledge regarding MRSA[8].

A descriptive study was conducted to assess the knowledge regarding the Methicillin Resistant *Staphylococcus aureus* infection among nurses in Sharda Hospital, Greater Noida, Uttar Pradesh. Convenient sampling technique was used for data collection in 60 nurses of Sharda Hospital. Result shows 39% have inadequate knowledge, 42% have moderate knowledge and 19% have poor knowledge. Final result shows that knowledge regarding MRSA among nurses of sharda hospital is inadequate[9].

Knowledge regarding methicillin-resistant *Staphylococcus aureus* (MRSA) is essential for hospital nurses because they are at the frontline of patient care. Adequate understanding helps nurses implement effective infection prevention measures, reduce hospital-acquired infections, safeguard patients, and protect themselves from occupational exposure.

2. Material and Method

Descriptive cross-sectional study design was used. The population of the study were the nurses of stupa community hospital, Chucchepati Kathmandu. Fourty one nurses were selected for the study by using enumerative sampling technique. Self-administered structured questionnaire was used for data collection. Validity of the instrument was established by developing the instrument on the basis of literature reviews and consulting with research advisor and subject experts. Pre-testing of the instrument was done among 10% nurses in selected hospital of Kathmandu. Permission was taken for data collection from concerned authority of selected hospital of Kathmandu district. Written informed consent was taken from each respondent by clarifying objectives of the study. Verbal and written consent was obtained from each participant before data collections. Data was analyzed by using descriptive and inferential statistics with SPSS 25 version.

3. Results

Analysis of Socio Demographic Variable

Table 1 Distribution of respondent by age, Religion, Ethnicity, Marital Status and Educational Level, Working Expression and Working Department n=41

Age	Frequency	Percentage (%)
20-24	18	43.9
25-29	13	31.7
30-34	7	17.1
35-39	3	7.3
Religion		
Hindu	24	58.5
Muslim	1	2.4
Christian	1	2.4
Buddhism	14	34.1
Others	1	2.4
Ethnicity		
Dalit	1	2.4
Janjati	22	53.7
Bhramin/Chhetri	18	43.9
Marital Status		
Married	15	36.6
Unmarried	26	63.4
Educational Level		
PCL	24	58.5
PBNS	7	17.1
BSN	9	22
MN	1	2.4
Working Experience		
1 month to 5 years	34	82.9
6 years to 10 years	5	12.2
11 years to 15 years	2	4.9
Working Department		
Emergency	2	4.9
General Ward	19	46.3
ICU	3	7.3
Post OP	6	14.6
Maternity/ Birthing Center	5	12.2
OT	6	14.6

Table 1: The findings indicate that the largest proportion of respondents were young adults aged 20–24 years (43.9%). A majority identified as Hindu (58.5%). With respect to ethnicity, over half belonged to the Janjati group (53.7%).Most participants were unmarried (63.4%). More than half of the respondents (58.8%) had completed the Proficiency Certificate Level (PCL) in nursing. About one-third of the respondents (34%) had work experience ranging from 1 month to 5 years. Nineteen percent of the respondents were working in the general ward.

3.1. Knowledge regarding Methicillin Resistant Staphylococcus aureus among Nurses

Table 2 Respondent's knowledge regarding Methicillin Resistant *Staphylococcus aureus* (MRSA)

Response	Frequency	Percentage (%)
Bacteria resistant to many antibiotics	36	87.8
Viral resistance to many antiviral	1	2.43
Fungal resistance to many antifungal	2	4.8
Parasitic resistance to may antiparasitic	2	4.8

Table 2 shows that a large majority of respondents (87.8%) had knowledge regarding MRSA.

Table 3 Respondent's knowledge regarding causes of Methicillin Resistant *Staphylococcus aureus* infection

Response	Frequency	Percentage (%)
Overuse and miss use of Antibiotics	22	53.67
Close contact with infected individual	8	19.51
Inadequate infection prevention measures	10	24.39
Missed vaccine dose in childhood	1	2.43

Table 3 shows that 53.67% of respondents correctly identified the causes of MRSA infection.

Table 4 Respondent's Knowledge regarding the reason MRSA is a major concern in healthcare setting

Response	Frequency	Percentage
Spreads through the air	3	7.31
Resistant to many antibiotics	27	65.9
Affects Health care workers	9	21.95
Emerging Health Problem	2	4.87

Table 4: shows 65.9% of respondents correctly answered the reason MRSA is a concern in healthcare settings.

Table 5 Respondent's Level of Knowledge regarding Methicillin Resistant *Staphylococcus aureus* among nurses

Knowledge Level	Frequency	Percentage
High Level	22	53.7
Moderate Level	8	19.5
Low Level	11	26.8

Table 5 illustrates the overall knowledge levels of participants regarding MRSA. The majority of respondents (53.7%) demonstrated a high level of knowledge, while 19.5% had a moderate level, and 26.8% showed a low level of knowledge.

Table 6 Association between Knowledge and Selected Demographic Variables N=41

Variables	Knowledge level (%)			Chi- square Value	p-value
	High Level	Moderate Level	Low Level		
Age					
20-24	9	4	5	5.442	0.489
25-29	5	4	4		
30-34	6	0	1		
35-39	2	0	1		
Religion					
Hindu	15	4	5	12.391	0.135
Muslim	0	0	1		
Christian	0	1	0		
Buddhism	7	2	5		
Others	0	1	0		
Ethnicity					
Dalit	0	0	1	7.455	0.114
Janjati	15	2	5		
Brahmin/Chhetri	7	6	5		
Marital Status					
Married	10	1	4	2.746	0.253
Unmarried	12	7	7		
Working Experience					
1 month-5 years	16	7	11	4.399	0.355
5 -10 years	4	1	0		
10-15 years	2	0	0		
Educational Level					
PCL	13	5	6	7.864	0.248
PBNS	6	1	0		
BSN	3	2	4		
MN	0	0	1		
Working Department					
Emergency	1	1	0	16.854	0.078
General Ward	10	4	5		
ICU	1	2	0		
Post-op	1	1	4		
Maternity/ Birthing	5	0	0		
OT	4	0	2		

Table 4 shows that most respondents were young, unmarried PCL nurses, mainly Hindu and Janjati. Knowledge level was not significantly linked to demographic or professional factors, though it tended to be higher among younger nurses, Janjatis, those with PCL/PBNS, and those in general or maternity wards.

4. Discussion

This study aimed to assess the knowledge regarding Methicillin Resistant *Staphylococcus aureus* (MRSA) among nurses of a selected hospital of Kathmandu. The findings showed that 53.7% of respondents had a high level of knowledge, 19.5% had moderate knowledge, and 26.8% had low knowledge. This indicates that more than half of the nurses had good knowledge regarding MRSA, but a notable number still had limited understanding.

A cross-sectional study conducted in Sri Lanka among ICU nurses showed that 52% had very good knowledge and 43.3% had moderate knowledge[10], which is comparable to the findings of this study, where 53.7% of respondents had a high level of knowledge.

A study conducted in Sharda Hospital, Greater Noida found that 39% of nurses had adequate knowledge, 42% had moderate knowledge, and 19% had poor knowledge. This shows that knowledge regarding MRSA among nurses in other settings also varies and highlights the need for improvement[11].

In this study, the association between knowledge and selected demographic variables like age, religion, ethnicity, marital status, educational level, working experience, and working department was analyzed. None of these variables showed a statistically significant association with the level of knowledge ($p > 0.05$).

Although most respondents had high knowledge regarding treatment (87.8%), infection control practices (90.2%), and symptoms (80.5%), fewer respondents had knowledge about how MRSA becomes resistant to antibiotics (41.5%) and the specific antibiotics it resists (46.3%). This indicates a need to enhance microbiological knowledge among nurses.

5. Conclusion

The study concludes that although the majority of healthcare workers demonstrated high knowledge of MRSA, there are significant deficiencies in understanding specific aspects such as antibiotic resistance, transmission environments, and high-risk scenarios. No statistically significant relationship was found between knowledge level and demographic factors like age, education, or experience, though working department showed a potential influence.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Siddiqui AH, Koirala J. Methicillin-resistant *Staphylococcus aureus* [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan– [updated 2023 Apr 2; cited 2025 Aug 19]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482221/

[2] Ali H, Fareed WAAA, Al-Mussa ZHT. Knowledge of healthcare workers to prevent methicillin-resistant *Staphylococcus aureus* infection in hospitals of Thi-Qar Governorate, Iraq. J Public Health Afr [Internet]. 2023 [cited 2025 Aug 19];14(10):1275. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC10658470

[3]   Murray CJ, Ikuta K, Sharara F, Swetschinski L, Aguilar GR, Gray A, et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. Lancet. 2022;399(10325):629-55. doi:10.1016/S0140-6736(21)02724-0

[4]   Amir A, Siddiqui A, Koirala J. Methicillin-resistant *Staphylococcus aureus* [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2025 Aug 19]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482221/

[5]   Karki LB, Gaire A, Ghimire R. Methicillin-resistant *Staphylococcus aureus* in Nepal: a systematic review and meta-analysis. Int J Infect Dis [Internet]. 2021 [cited 2025 Aug 19];103:98-107. Available from: https://www.ijidonline.com/article/S1201-9712(20)32463-2/

[6]   Ashok A, Gaire A, Estrada R, Ghimire R. Methicillin-resistant *Staphylococcus aureus* in Nepal: a systematic review and meta-analysis. Int J Infect Dis [Internet]. 2021 [cited 2025 Aug 19];103:98-107. Available from: https://www.ijidonline.com/article/S1201-9712(20)32463-2

[7]   Esraa A, Khalil N. A descriptive exploratory study to assess nurses' knowledge related to MRSA. Mansoura Nurs J. 2021;8(2):89-101.

[8]   Nandani, M., Santhosh, A., Eldho, E., Sunny, L., & Kuruvilla, M. (2022). A study to assess the level of knowledge regarding MRSA among staff nurses in selected 36 hospitals, Thrissur. *IOSR Journal of Nursing and Health Science, 11*(2), 6 10. https://doi.org/10.9790/1959-1102010610.

[9]   Divya U, Bhardwaj H. A descriptive study to assess the knowledge regarding methicillin-resistant *Staphylococcus aureus* among staff nurses in Uttar Pradesh. Int J Innov Res Multidiscip Field [Internet]. 2021 [cited 2025 Aug 19];7(11):45-52. Available from: https://www.ijirmf.com/wp-content/uploads/IJIRMF202111018.pdf

[10]   Mohommad SR, Kanchana W, Madumali W. Knowledge, attitude, and practices regarding management of MRSA among intensive care unit nurses in Sri Lanka. Proceedings of the 3rd Research Symposium of Faculty of Allied Health Science, University of Ruhuna. 2020.

[11]   Divya U, Bhardwaj H. A descriptive study to assess the knowledge regarding methicillin-resistant *Staphylococcus aureus* among staff nurses in Uttar Pradesh. Int J Innov Res Multidiscip Field [Internet]. 2021 [cited 2025 Aug 17]. Available from: https://www.ijirmf.com/wp-content/uploads/IJIRMF202111018.pdf