

“A Descriptive study to assess the knowledge regarding Methicillin Resistant Staphylococcus Aureus among staff nurses in Uttar Pradesh.”

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Abstract: **Introduction:** Methicillin-resistant Staphylococcus aureus refers to a group of Gram-positive bacteria that are genetically distinct from other strains of Staphylococcus aureus. It is responsible for several difficult-to-treat infections in humans. **Aim:** The objectives of the study were to assess the knowledge regarding the Methicillin Resistant Staphylococcus Aureus infection among staff nurses in Sharda Hospital, Greater Noida, Uttar Pradesh. **Material and Methods:** A qualitative research approach was used and the research design adopted for the present study was descriptive survey research design. Convenient sampling technique was used for data collection in the study. The setting of the study was Sharda Hospital and the target population for the study was 60 staff nurses of Sharda Hospital. **Result:** 91.60 percent (55) of respondents were in the age less than 30 years. The data on distribution of subject according to gender revealed that majority 51.60 percent (31) of respondents were male. According to Education Qualification, the data revealed that majority 90% (54) were studied GNM, based on working experience, the data shows that 63.30 percentage (38) were having experience of 1-5 years. The responses on Marital Status shows that 53.30 percentage (28) staff were Unmarried, On religion shows that majority 86.60% (52) were Hindu. The respondents on source of information regarding Methicillin Resistant Staphylococcus Aureus revealed that 50% (32) were had information through Mass media and Internet. Majority of the sample were 32(53.30%) were working in Intensive care units. The findings show that knowledge score mean value (10.98) and median (11) and standard of deviation (2.182). **Conclusion:** This study concluded that majority of the staff nurses have good knowledge regarding Methicillin Resistant Staphylococcus Aureus infection but most didn't make it to excellent which indicates more research and teaching regarding Methicillin Resistant Staphylococcus Aureus.

Key Words: Methicillin, anti-microbials, Intensive care units, Methicillin Resistant Staphylococcus Aureus (MRSA), Staff nurses, Bacteremia.

1. INTRODUCTION:

The term Superbug is a word which is used to describe an organism that is resistant to more than one antibiotic. Methicillin Resistant Staphylococcus Aureus(MRSA) is a superbug which is commonly found in world of hospital acquired infection .Methicillin-resistant Staphylococcus aureus refers to 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.

Antibiotic resistance is the ability of a microorganism to withstand the effects of an antibiotics and the Staphylococcus Aureus was the first bacteria which was resistant to penicillin was found in1947.Methicillin Resistant Staphylococcus Aureus infection is caused by Staphylococcus aureus bacteria which commonly found on human skin. Usually, Staphylococcus aureus is harmless but it is also a main cause of bacteremia, osteomyelitis, wound infection even leads to death. First case of Staphylococcus aureus was identified in 1880s by Ogston in the purulent fluid from an abscess of leg. It was formally discovered by Rosenbach. The symptoms of Methicillin Resistant Staphylococcus Aureusis warm to touch, pus formation, fever.The Methicillin Resistant Staphylococcus Aureus is transmitted from pens, mobiles and by skin-to-skin contact. There are two places where populations get infected by Methicillin Resistant Staphylococcus Aureus one is hospital and other is community. The risk factors for Methicillin Resistant Staphylococcus Aureus are being hospitalized, having an invasive medical device, providing long term care to the patient, HIV infection carrier, living in unsanitary conditions, participating in contact sports or activities, using illicit injected drugs. Complications of Methicillin Resistant Staphylococcus Aureus are infections in lungs, heart infection, bones infection, infection in bloodstream. To prevent from Methicillin Resistant Staphylococcus Aureus perform hand hygiene, cover your wound, shower after playing games, don't share your personal items, sanitize linen. It infects the different parts of body and treated according to the site of infection. Recently anti-microbials have developed for the treatment of

Methicillin Resistant Staphylococcus Aureus including Ceftarolime, Cefotibiprole, Dalbavancin, Oretacoancin, Iclaprim and Helafloxacin.

2. NEED FOR STUDY:

Methicillin Resistant Staphylococcus Aureus, which is a kind of super bug mutant, is killing 10,000 people a year
- *George Galloway*

Aureus as a significant pathogen, with MRSA incidence ranging from 2.3 to 69.1% In 2005, invasive MRSA infections in the US occurred at a rate of 31.8 per 100,000 people after adjustment for age, race, and gender, and 75% of these invasive MRSA infections involved SAB. The prevalence of MRSA was found to be 59(72.0%) and the recurrence of MRSA in male patients was 55.9% versus 44.1% in female patients. In addition, the 19-40 age group had the highest rate of MRSA and low frequency of MRSA (16.9%) strains were found in patients above 61 years of age. This demands tremendous economic costs on patients and hospitals. The duration of hospitalization stay for MRSA infection is approximately twice that of another sort of stay. In a study Minnesotans published in the journal of the American Medical Association the average age of people with MRSA in a hospital was 68 years while the average age of people with community associated MRSA is 23 years.

According to the CDC, a concerted effort by the 2013 National Action Plan to Prevent Health care associated infections helped to reduce bloodstream infections caused by Methicillin Resistant Staphylococcus Aureus by 50% by 2020.

The cases of Methicillin Resistant Staphylococcus Aureus are globally found and there is no single strain is found. Methicillin Resistant Staphylococcus Aureus is occurring as waves of so many infections. There is different strain of Methicillin Resistant Staphylococcus Aureus is present in the different places example: In North America and Europe the Healthcare associated Methicillin Resistant Staphylococcus Aureus (HA-MRSA) clonal complex 30 (CC30) is found, In North America Community Associated Methicillin Resistant Staphylococcus Aureus (CA-MRSA) USA300 is found. In Australia Livestock associated Methicillin Resistant Staphylococcus Aureus (including ST 398) and ST 93 is found. The first HA-MRSA was found in United Kingdom.

There was a study conducted in Indian tertiary for two years from January 2008 to December 2009 which shows that the incidence of MRSA only 25% varies from western country. (Joshi S, Balaji V 2009). Methicillin Resistant Staphylococcus Aureus increases the risk of infection and also the infecting strain as 50-80% cases.

3. MATERIAL AND METHODS:

A qualitative research approach was used and the research design adopted for the present study was descriptive survey research design. The investigator had utilized convenient sampling technique to select the samples and the tool used for data collection in the study was Socio-demographic profile and Self Structured Knowledge Questionnaire. The setting of the study was Sharda Hospital and the target population for the study was the staff nurses working in Sharda Hospital, Greater Noida, Uttar Pradesh. Sample size was 60 staff nurses of Sharda Hospital. The data obtained was analyzed based on objectives and hypothesis.

4. RESULT:

The characteristics of the demographic variables, described in terms of their frequency and percentage distribution which showed that the majority 91.60 percent (55) of respondents were in the age Less than 30 years, 8.30 percent (5) of the respondents were in the age between 31-40 years, 0 percent (0) respondents were in the age of 41 above. In relation to gender, 51.60 percent (31) of respondents were male, 48.30 percent (29) were female. According to educational qualification majority 90% (54) were studied GNM, 10% (6) were studied Bsc. Nursing and none of the staff nurses studied ANM or Msc. nursing. As for working experiences, 16.60 percentage (10) were having experience of less than 1 year, 63.30 percentage (38) have 1-5 years experiences, 16.60 percentage (10) staff nurses have experience of 6-10 years and only 3.30 percentage (2) staff nurses were having experience above 11 years. In case of marital status, 53.30 percentage (32) staff were Unmarried and 46.60 percentage (28) staff were Unmarried. None of the staff nurses were divorced or widow. According to religion 86.60% (52) were Hindu, 6.60% were Muslim, and 6.60% were Christian. According to source of information regarding Methicillin Resistant Staphylococcus Aureus majority of 31.60% (19) had information source from Workshops/Conferences/In-Service Education, 50% (32) had information through Mass media and Internet, 15% (9) had information through Newspapers/Printed materials and 3.30% (2) had information through other sources.

Distribution of respondents by place of work shows that 53.30% (32) staff were working in Intensive care units, 11.60% (7) staff were working in Medicine wards, 35% (21) staff were working in Surgical wards and none from the out-patient department.

The mean for overall knowledge level of staff nurses regarding Methicillin Resistant Staphylococcus Aureus was 10.98 with standard deviation 2.18.

According to the association between knowledge regarding Methicillin Resistant Staphylococcus Aureus among Staff Nurses as age, gender, educational qualification, working experience, marital status, religion, source of information regarding Methicillin Resistant Staphylococcus Aureus, place of work, the obtained Chi-square value for age ($\chi^2=2.08$, $p>0.05$), Educational Qualification ($\chi^2= 3.84$, $p>0.05$), Working Experience ($\chi^2 =1.34$, $p>0.05$), Religion ($\chi^2 =2.25$, $p>0.05$), Source of information ($\chi^2 =4.03$, $p>0.05$), Place of work ($\chi^2 =1.91$, $p>0.05$) is lesser than table value which indicates that there is no significant association between knowledge score with selected demographic variables.

Table-1: Distribution of Respondents by Age

N=60

AGE IN YEARS	FREQUENCY	PERCENTAGE (%)
Less than 30 years	55	91.60%
31-40 years	5	8.30%
41-50 years	0	0%
Above 51 years	0	0%
Total	60	100%

Table-1 shows the distribution of subject according to age. The data revealed that majority 91.60 percent (55) of respondents were in the age Less than 30 years, 8.30 percent (5) of the respondents were in the age between 31-40 years, 0 percent (0) respondents were in the age between 41-50 years, 0 percent (0) respondents were in the age of Above 51 years.

Table-2: Distribution of Respondents by Gender

VARIABLES IN GENDER WISE	FREQUENCY	PERCENTAGE (%)
Male	31	51.60%
Female	29	48.30%
Total	60	100%

Table-2 shows the data on distribution of subject according to gender. The data revealed that majority 51.60 percent (31) of respondents were male, 48.30 percent (29) were female.

Table-3: Distribution of Respondents by Education Qualification

EDUCATION QUALIFICATION	FREQUENCY	PERCENTAGE
ANM	0	0%
GNM	54	90%
Bsc. Nursing	6	10%
Msc. Nursing	0	0%
Total	60	100%

Table-3 shows the distribution of subject according to Education Qualification. The data revealed that majority 90% (54) were studied GNM, 10% (6) were studied Bsc. Nursing, 0 % staff studied ANM and 0% staff were studied Msc. Nursing.

Table-4: Distribution of Respondents on Working Experience

WORKING EXPERIENCE	FREQUENCY	PERCENTAGE
16.Less than 1 year	10	16.60%
1-5 years	38	63.30%
6-10 years	10	16.60%
Above 11 years	2	3.30%
Total	60	100%

Table-4 shows distribution of respondents on working experience. The data shows that 16.60 percentage (10) were having experience of less than 1 year, 63.30 percentage (38) were having experience of 1-5 years, 16.60 percentage

(10) staff were having experience of 6-10 years and only 3.30 percentage (2) staff nurses were having experience of above 11 years.

Table-5: Distribution of Respondents on Marital Status

Marital status	Frequency	Percentage
Unmarried	32	53.30%
Married	28	46.60%
Widow	0	0%
Divorced	0	0%
Total	60	100%

Table-5 shows the responses on Marital Status. The data shows that 53.30 percentage (32) staff were Unmarried, 46.60 percentage (28) staff were Married, 0 percentage (0) staff were Widow and 0 percentage (0) were Divorced.

Table-6: Distribution of Respondents by Religion

RELIGION	FREQUENCY	PERCENTAGE
Hindu	52	86.60%
Muslim	4	6.60%
Christian	4	6.60%
Others	0	0%
Total	60	100%

Table-6 shows the distribution of respondents by religion. The data shows that majority 86.60% (52) were Hindu, 6.60% were Muslim, 6.60% were Christian and 0% (0) were follow other religion.

Table-7: Distribution of Respondents on Source of information regarding Methicillin Resistant Staphylococcus Aureus

SOURCE OF INFORMATION	FREQUENCY	PERCENTAGE
Workshops/ Conferences/In-Service Education	19	31.60%
Mass media and Internet	32	50%
Newspapers/Printed materials	9	15%
Others	2	3.30%
Total	60	100%

Table-7 shows the distribution of respondents by source of information regarding Methicillin Resistant Staphylococcus Aureus. The data revealed that 31.60% (19) were had information with the source of Workshops/Conferences/In-Service Education, 50% (32) were had information through Mass media and Internet, 15% (9) were had information through Newspapers/Printed materials and 3.30% (2) were had information through other sources.

Table-8: Distribution of Respondents by Place of work

PLACE OF WORK	FREQUENCY	PERCENTAGE
Intensive care units	32	53.30%
Medicine wards	7	11.60%
Surgical wards	21	35%
Out-patient departments	0	0%
Total	60	100%

Table-8 shows distribution of respondents by place of work. The data shows that 53.30% (32) staffs were working in Intensive care units, 11.60% (7) staffs were working in Medicine wards, 35% (21) staffs were working in Surgical wards and 0% (0) staff were working in Out-patient department from the samples.

Section-2: Overall and aspect wise structured knowledge scores of respondents on Methicillin Resistant Staphylococcus Aureus.

Table-9: Classification of Respondents on Knowledge level regarding Methicillin Resistant Staphylococcus Aureus

KNOWLEDGE LEVEL	CATEGORY	RANGE OF SCORE	FREQUENCY	PERCENTAGE
Poor knowledge	Less than 40%	1-8	9	15%
Fair knowledge	41%-60%	9-12	35	58.33%
Good knowledge	61%-80%	13-16	16	26.66%
Excellent knowledge	81%-100%	17-20	0	0%
Total	100%	20	60	100%

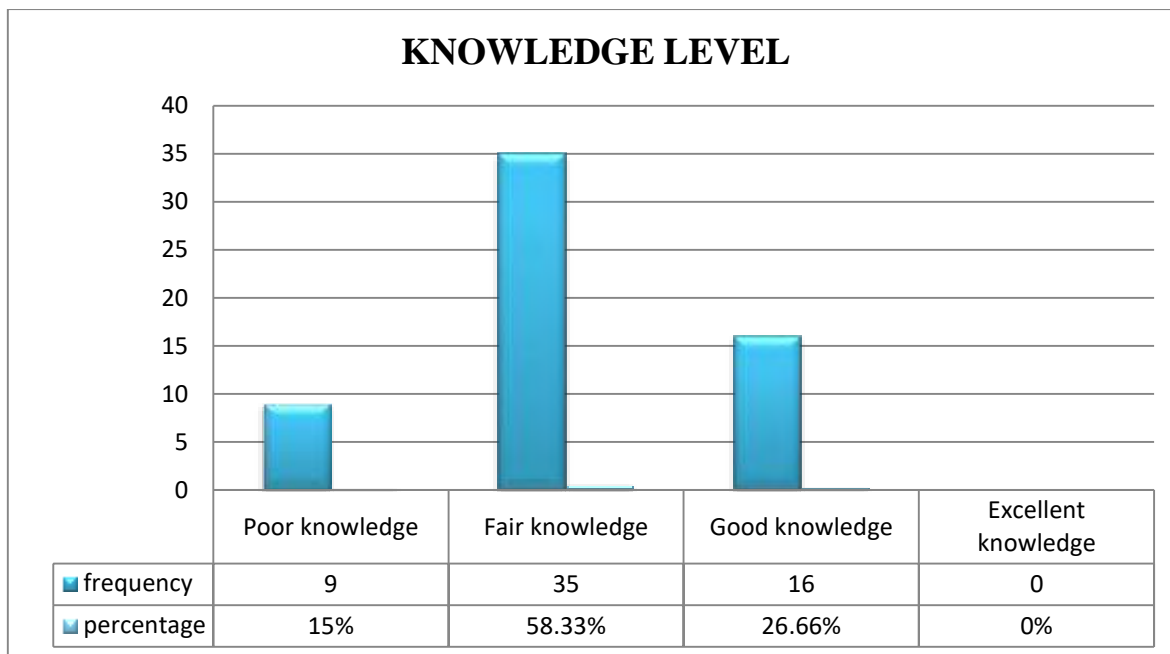


Figure-1: Classification of Respondents on Knowledge level regarding Methicillin Resistant Staphylococcus Aureus

Section-3: Association of level of knowledge with their selected demographic variables on Methicillin Resistant Staphylococcus Aureus.

Table-10: Association between knowledge regarding Methicillin Resistant Staphylococcus Aureus among Staff Nurses N=60

DEMOGRAPHIC VARIABLES	SAMPLES	KNOWLEDGE RESPONDENTS		X ² VALUE	P VALUE
		< median	> median		
Age					
Less than 30 years	55	33	22	2.08 df=3	NS
31-40 years	5	3	2		
41-50 years	0	0	0		
Above 50 years	0	0	0		
Gender					
Male	31	19	12	0.03 df=1	S
Female	29	17	12		
Educational Qualification					
ANM	0	0	0	3.84 df=3	NS
GNM	54	32	22		
Bsc. Nursing	6	4	2		
Msc. Nursing	0	0	0		
Working Experience					

Less than 1 year	10	6	4	1.34 df=3	NS
1-5 years	38	23	15		
6-10 years	10	6	4		
Above 11 years	2	1	1		
Marital Status					
Unmarried	32	19	13	0.02 df=3	S
Married	28	17	11		
Widow	0	0	0		
Divorced	0	0	0		
Religion					
Hindu	52	31	21	2.25 df=3	NS
Muslim	4	2	2		
Christian	4	2	2		
Others	0	0	0		
Source of Information regarding Methicillin Resistant Staphylococcus Aureus					
Workshops/Conferences/ In-Service Education	19	11	8	4.03 df=3	NS
Mass media and Internet	30	18	12		
Newspapers/Printed materials	9	5	4		
Others	2	1	1		
Place of work					
Intensive care units	32	19	13	1.91 df=3	NS
Medicine wards	7	4	3		
Surgical wards	21	13	8		
Out-patient departments	0	0	0		

5. DISCUSSION:

The present study was conducted to assess the knowledge regarding Methicillin Resistant Staphylococcus Aureus infection among staff nurses in Sharda Hospital, Greater Noida, Uttar Pradesh.

Characteristics of the demographic variables:

The characteristics of the demographic variables, described in terms of their frequency and percentage distribution which showed that the majority 91.60 percent (55) of respondents were in the age Less than 30 years, 8.30 percent (5) of the respondents were in the age between 31-40 years, 0 percent (0) respondents were in the age of 41 above.

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As for working experiences, 16.60 percentage (10) were having experience of less than 1 year, 63.30 percentage (38) have 1-5 years experiences, 16.60 percentage (10) staff nurses have experience of 6-10 years and only 3.30 percentage (2) staff nurses were having experience above 11 years.

In case of marital status, 53.30 percentage (32) staff were Unmarried and 46.60 percentage (28) staff were Unmarried. None of the staff nurses were divorced or widow. According to religion 86.60% (52) were Hindu, 6.60% were Muslim, and 6.60% were Christian.

According to source of information regarding Methicillin Resistant Staphylococcus Aureus majority of 31.60% (19) had information source from Workshops/Conferences/In-Service Education, 50% (32) had information through Mass media and Internet, 15% (9) had information through Newspapers/Printed materials and 3.30% (2) had information through other sources.

Distribution of respondents by place of work shows that 53.30% (32) staff were working in Intensive care units, 11.60% (7) staff were working in Medicine wards, 35% (21) staff were

Major findings of the study:

- Majority of the sample were 55(91.60%) in between less than 30 years in age.
- Majority of the sample were 31(51.60%) is male in gender.
- Majority of the sample were 54(90%) is studied GNM.

- Majority of the sample were 38(63.30%) is 1-5 years of working experience.
- Majority of the sample were 32(53.30%) is unmarried.
- Majority of the sample were 52(86.60%) is Hindu in religion.
- Majority of the sample were 32(50%) is having source of information regarding Methicillin Resistant Staphylococcus Aureus through Mass media and Internet.
- Majority of the sample were 32(53.30%) were working in Intensive care units.
- The findings show that knowledge score mean value (10.98) and median (11) and standard of deviation (2.182).
- The result of study shows that there is no association between knowledge level and demographic variables.

6. RECOMMENDATIONS:

On the basis of this study that had been conducted, certain suggestions are given for further studies.

- A similar study can be done on large sample to validate and generalize the findings
- A similar study can be done for other innovative and uncommon health issues
- A similar study can be conducted and evaluated using teaching strategies like structured teaching program, self-instructional modules.

7. CONCLUSION:

In this study, Descriptive design with Quantitative research approach was used. Sixty samples were drawn using non probability convenient sampling technique. The data was collected using Self-Structured Knowledge Questionnaire and further analyzed and interpreted by applying statistical methods. The findings revealed that there was improvement in overall knowledge of staff nurses regarding Methicillin Resistant Staphylococcus Aureus. There was no significant association between levels of knowledge with selected demographic variables. Hence, the research (H₀) hypothesis was accepted.

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CONFLICTS OF INTEREST : There are no conflicts of interest

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