

Knowledge, Attitude And Practice Of Madinah Nurses Toward Methicillin-Resistant Staphylococcus Aureus (MRSA): A Survey Based Study

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Abstract:

Background: This study examines nurses' MRSA knowledge, attitudes, and protocol compliance. **Settings and Design:** a cross-sectional study was conducted from April to May 2023, 220 healthcare nurses in Al Madinah Al Munawara, Saudi Arabia, completed a cross-sectional questionnaire. **Methods and Material:** A questionnaire developed from nurse knowledge surveys assessed knowledge. A Likert scale assessed attitude. The compliance part asked respondents whether they followed MRSA patient care guidelines. Google Forms sent the poll to 300 nurses through social media and apps. **Results:** The majority of respondents (67.7%) scored Poor knowledge indicating a low level of knowledge about MRSA. Most nurses have a positive attitude and good self-compliance to MRSA preventive measures. There is a significant relationship between nurses' knowledge levels and their attitudes ($p=0.001$). However, no significant relationship was found between nurses' knowledge levels and their self-compliance. **Conclusions:** Nurses' knowledge and attitudes exhibit notable variations contingent upon their tenure as registered nurses, their present occupational environment, and their educational attainment. Furthermore, a lack of substantial correlation exists between the self-compliance of nurses and any of the demographic variables. The aforementioned findings offer significant insights into the variables that may impact the knowledge levels of nurses, thereby presenting potential utility in the formulation of strategies aimed at enhancing knowledge among nursing personnel. **Future Recommendation:** Nurses must understand MRSA to improve patient outcomes and prevent its spread. Nurses should prioritize MRSA prevention and treatment training to properly tackle this difficult illness.

Key words: Knowledge, Attitude, Practice, Staphylococcus Aureus, MRSA, Healthcare Worker & Nurses.

Introduction:

Staphylococcus aureus is widely recognized as a significant pathogen responsible for foodborne illness on a global scale. Staphylococcus aureus has the potential to cause severe and life-threatening illnesses, including the symptoms of toxic shock syndrome, cardiac infections, septicemia, and respiratory infections [1]. Despite this, the substantial levels of antimicrobial resistance exhibited by these bacteria pose a significant public health concern, with MRSA accounting for roughly 13-74% of S. aureus infections [2]. Methicillin-Resistant Staphylococcus aureus (MRSA) is a growing concern in Saudi Arabia, with an average rate of 38% nationwide. However, the incidence of MRSA varies considerably between regions, with the Western region having the highest rate at 42%, followed by the Central region at 32%, and the Eastern region at 27%. The high incidence in the Western region may be due to

the presence of holy Islamic sites that attract millions of visitors annually [3].

The nasal carriage of MRSA in Saudi Arabia is estimated to be around 25% among all isolated *S. aureus* strains [4]. Among healthcare workers in Saudi Arabia, MRSA colonization ranges from 18%-76%. The clonal diversity of isolated MRSA strains varies but specific genotypes are more frequently encountered. Type ST239-III is common with hospital-acquired MRSA, while types CC80-IV (ST80) and CC22-IV are prevalent among community-acquired MRSA isolates in Saudi Arabia [5]. Nurses play a crucial role in the prevention and management of Methicillin-Resistant *Staphylococcus aureus* (MRSA) infections. As frontline healthcare providers, nurses are often the first to identify and respond to potential MRSA infections [6]. Their knowledge and understanding of MRSA are essential in preventing its spread and ensuring the best possible outcomes for patients [7-8].

MRSA is a type of bacteria resistant to many commonly used antibiotics. This makes it difficult to treat and can result in serious infections, particularly in healthcare settings where patients may have weakened immune systems. Nurses are responsible for implementing infection control measures to prevent the spread of MRSA, such as hand hygiene, proper use of personal protective equipment, and isolation of infected patients [9-10]. In addition to preventing the spread of MRSA, nurses also play a key role in its management. They are responsible for monitoring patients for signs of infection, administering antibiotics and other treatments, and providing education and support to patients and their families. Nurses must thoroughly understand MRSA treatment protocols and recognize when a patient's condition is not improving or when additional interventions may be necessary [11-12].

Nurses' knowledge of MRSA is also important in preventing its spread outside healthcare settings. They can educate patients and their families on how to prevent the spread of MRSA in the community, such as through proper hand hygiene and avoiding close contact with infected individuals [13-14]. Nurses' knowledge and understanding of MRSA are essential to ensure the best possible patient outcomes and prevent its spread. Ongoing education and training on MRSA prevention and management should be a priority for all nurses to ensure they have the skills and knowledge necessary to combat this challenging infection effectively. This investigation aims to assess the level of knowledge among nurses regarding Methicillin Resistant *Staphylococcus aureus* (MRSA), their disposition towards patients afflicted with MRSA, and their adherence to MRSA protocols.

Subjects and Methods:

A cross-sectional questionnaire-based survey was conducted among healthcare nurses in Al Madinah Al-Munawara, Saudi Arabia, from April 2023 to May 2023.

Sample size and population:

The required sample size has been calculated using the Med Calc statistical software VAT registration number is BE 0809 344 640. Med Calc Software is a corporate member of the American Statistical Association. Member of the International Association of Statistical Computing.

Determining the Size of a Sample to take from a Finite Population

Size of a sample to choose from a finite survey population is known to be ascertainable by Chebyshev's inequality together with anticipated magnitude of population coefficient of variation in case of simple random sampling.

The total number of hospitals in Al-Madina was 32 hospitals; by using the equation of sample size calculation for the known population we used sample size for known population equation as follows:

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right)}$$

N = population size

e = Margin of error (percentage in decimal form)

z = z-score

p = Standard of deviation

In this formula, the population proportion is .90 (90%). The z score is 2.575. The margin of error is 0.1 (1.0%). Then the minimum required sample size per month was 220 nurses.

Ethical consideration:

A pilot study was approved to test the validity and clarity of the questionnaire after being approved by two supervisors in the field of infectious diseases. The study was approved from IBR (23-059) and a permission from each applicant was collected.

Instruments and data collection:

The questionnaire was formulated and modified according to previous research conducted among graduates and undergraduates from the University of Southern Mississippi's (USM) Nursing program [14]. The composite questionnaire was developed by integrating three distinct questionnaires, each targeting a specific variable, to assess the KAP and a concise overview of the demographic was also incorporated. The assessment of knowledge was conducted through the utilization of a questionnaire that was adapted from existing questionnaires pertaining to the knowledge of nurses. The assessment of the attitude section was conducted through the utilization of a Likert scale. Respondents were presented with the option of always, sometimes, and never by the compliance section to reflect on their own adherence to protocols concerning the care of patients with MRSA. The survey instrument, designed using Google Forms, was distributed to a sample of around 300 nurses through various social platforms and applications.

Data Management and Analysis Plan:

The data were inputted into the computer utilizing the IBM SPSS software package, specifically version 24.0. The qualitative data were presented in numerical and percentage formats. The Chi-square test was employed to examine the comparison of categorical variables across various groups.

The outcomes of significance tests are expressed as probabilities with two tails. The statistical significance of the findings was evaluated at a threshold of significance of 5%.

Results of Study

Demographic data:

According to the data in Table. 1, the majority of the individuals in this group are female (85.4%), while 14.6% are male. In terms of years of experience, the largest group (53.2%) has less than 5 years of experience, followed by those with 6-10 years (15.0%), 11-15 years (13.2%), 16-20 years (15.0%), and finally those with over 20 years of experience (3.6%). Regarding the current work setting, the largest group (49.09%) works in acute care, followed by outpatient (14.55%), inpatient (15.45%), home health (7.27%), and other settings (13.64%). The educational status showed that the majority of individuals in this group have a Baccalaureate in nursing (56.82%), followed by those with post graduate studies (25.00%) and those with a Diploma in nursing (18.18%) (Table.1).

Table-1: Basic demographic data of the included subjects.

Demographic	Number	Percent
Gender		
Male	32	14.6
Female	188	85.4
Years of experience		

<5 years	117	53.2
6-10	33	15.0
11-15	29	13.2
16-20	33	15.0
20+	8	3.6
Current work setting		
Acute care	108	49.09
Outpatient	32	14.55
Inpatient	34	15.45
Home Health	16	7.27
Other	30	13.64
Educational status		
post graduate studies	55	25.00
Bachelor's degree in nursing	125	56.82
Diploma in nursing	40	18.18
Total	220	100.0

Assessment of included subjects' knowledge:

Table 2 presents the results of a survey assessing the knowledge of a group of individuals regarding Methicillin-resistant Staphylococcus aureus (MRSA). The survey consisted of a series of statements about MRSA, and respondents were asked to indicate whether they believed each statement to be true or false, or if they were unsure. The first question is MRSA is a Gram-positive coccus, 66.4% of respondents correctly identified this statement as true, while 19.1% answered incorrectly and 14.5% were unsure. About 81.8% of respondents correctly identified 'Hand hygiene is not effective in preventing MRSA spread' as false, while 14.5% answered incorrectly and 3.6% were unsure. According to the data, 85.5% of respondents correctly identified that MRSA is rarely transmitted via the hands of healthcare workers is false, while 10.9% answered incorrectly and 3.6% were unsure. There is a high level of understanding among respondents for some statements. For example, 94.1% correctly identified that gloves should be worn when examining patients with MRSA. Similarly, 72.3% correctly identified that MRSA bacteraemia should be treated even if the patient is asymptomatic. Also, 90.9% correctly identified that MRSA wound infection should be treated with intravenous or oral antibiotics depending on the clinical picture. Similarly, 64.5% correctly identified that a patient with MRSA infection or colonization can be transferred to another hospital or nursing home for good clinical reasons.

However, for other statements, opinions were more divided among respondents. For instance, when asked whether MRSA nasal carriers should be treated with nasal antiseptics, 37.7% answered correctly that this is true in some cases, while 36.8% answered incorrectly and 25.5% were unsure. Correspondingly, when asked whether alcohol hand gel is as effective as hand washing in reducing MRSA transmission, 43.2% answered correctly that this is true, while 45.9% answered incorrectly and 10.9% were unsure. For instance, when asked whether MRSA bacteraemia should be treated with Tazocin, 25.5% answered correctly that this is true in some cases, while 31.4% answered incorrectly and 43.2% were unsure.

Table-2: Knowledge regarding various aspects of MRSA.

Knowledge	Correct Answer		Wrong Answer		Unsure	
	No	%	No	%	No	%
MRSA is a Gram-positive coccus.	146	66.4	42	19.1	32	14.5

Hand hygiene is not effective in preventing MRSA spread.	32	14.5	180	81.8	8	8
MRSA is rarely transmitted via the hands of healthcare workers.	24	10.9	188	85.5	8	8
Gloves should be worn when examining patients with MRSA.	207	94.1	9	4.1	4	4
MRSA bacteraemia does not require treatment if asymptomatic.	41	18.6	159	72.3	20	20
MRSA nasal carriers should be treated with nasal antiseptics.	83	37.7	81	36.8	56	56
Alcohol hand gel is as effective as hand washing in reducing MRSA transmission.	95	43.2	101	45.9	24	24
MRSA nasal carriage should be treated with nasal antibiotics.	114	51.8	80	36.4	26	26
A patient with MRSA infection or colonization should be discharged home promptly if medically fit for discharge.	98	44.5	84	38.2	38	38
A patient with MRSA infection/colonization can be transferred to another hospital or nursing home for good clinical reasons.	142	64.5	59	26.8	19	19
MRSA wound infection requires no treatment if asymptomatic.	38	17.3	173	78.6	9	9
MRSA skin carriage should be treated with topical or oral antibiotics.	139	63.2	53	24.1	28	28
MRSA bacteraemia should be treated with Tazocin.	56	25.5	69	31.4	95	95
MRSA wound infection should be treated with intravenous or oral antibiotics depending on the clinical picture.	200	90.9	12	5.5	8	8
MRSA skin carriage should be managed with antiseptic solution (chlorhexidine) for body wash.	123	55.9	46	20.9	51	51
MRSA bacteremia should be treated with oral rifampicin (rifampin) if mild infection	82	37.3	70	31.8	68	68
A patient with MRSA infection or colonization should not be discharged home before infection/colonization eradication.	99	45.0	87	39.5	34	34

Figure 1 showed that 19 respondents (8.6%) scored in the “Excellent” category, indicating a high level of knowledge about MRSA. 52 respondents (23.6%) scored in the “Good” category, indicating a moderate level of knowledge. The majority of respondents, 149 individuals (67.7%), scored in the “Poor” category, indicating a low level of knowledge about MRSA.

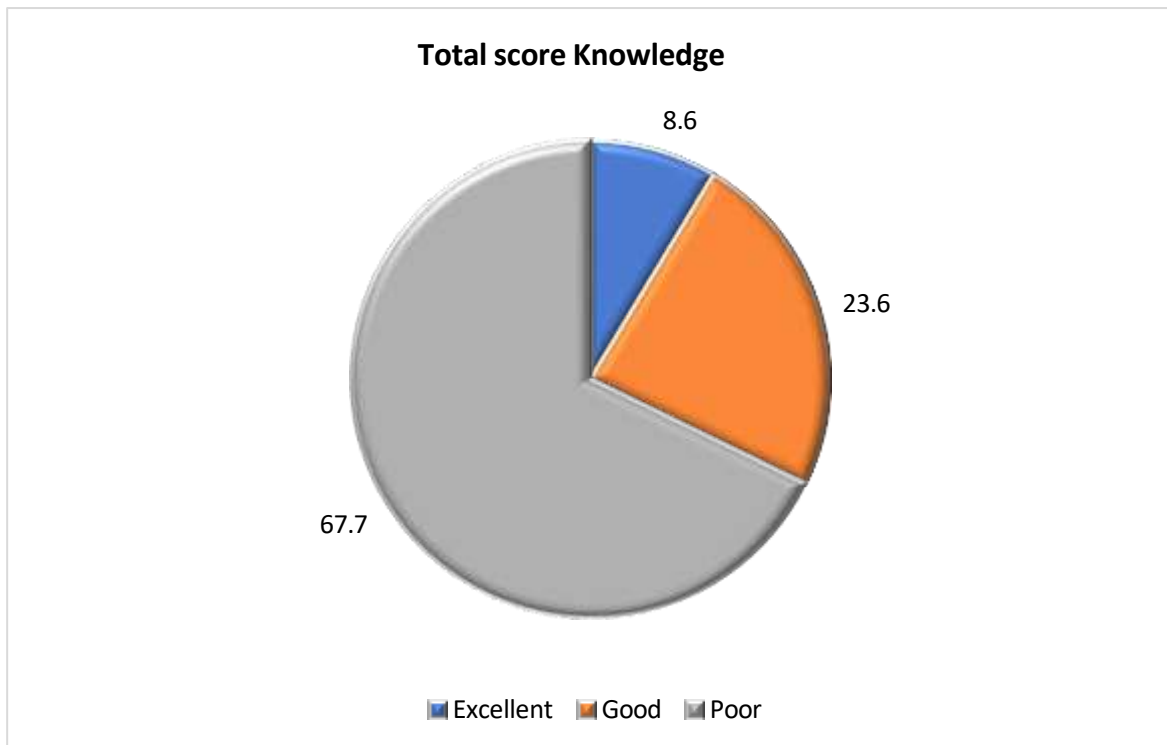


Figure-1: Total knowledge score chart after the survey.

Attitude level:

This table presents the results of a survey assessing the attitudes of a group of individuals towards Methicillin-resistant Staphylococcus aureus (MRSA). Respondents were asked to indicate their level of agreement with a series of statements about MRSA. The results show that there is a high level of agreement among respondents for some statements. For example, 73.2% agreed or highly agreed that MRSA is a national problem, indicating that the majority of respondents believe that MRSA is a significant issue at the national level. Similarly, 63.2% agreed or highly agreed that MRSA is a problem in their hospital, indicating that the majority of respondents believe that MRSA is a significant issue within their specific hospital.

However, for other statements, opinions were more divided among respondents. For instance, when asked whether people colonized with MRSA are a danger to everyone they come into contact with, 35.5% agreed or highly agreed, while 41.9% disagreed or highly disagreed and 22.7% were neutral. This suggests that there is some uncertainty among respondents about the risk posed by individuals who are colonized with MRSA. Similarly, when asked whether patients colonized with MRSA probably have poor personal hygiene, 9.1% agreed or highly agreed, while 78.2% disagreed or highly disagreed and 12.7% were neutral. This suggests that the majority of respondents do not believe that there is a strong link between MRSA colonization and poor personal hygiene.

The overall attitude showed that 66 respondents (30.0%) scored in the "Positive" category, indicating a generally positive attitude towards MRSA. 118 respondents (53.6%) scored in the "Neutral" category, indicating a more neutral attitude. 36 individuals (16.4%) scored in the "Negative" category, indicating a negative attitude towards MRSA infection.

Table-3: Attitude toward MRSA infection.

Attitude	Highly Disagree		Disagree		Neutral		Agree		Highly Agree	
	No	%	No	%	No	%	No	%	No	%
MRSA is a national problem.	17	7.7	23	10.5	19	8.6	90	40.9	71	32.3
MRSA is a problem in this hospital.	0	0.0	25	11.4	56	25.5	95	43.2	44	20.0

People colonized with MRSA are a danger to everyone they come into contact with.	23	10.5	69	31.4	50	22.7	45	20.5	33	15.0
A post-operative patient with an open wound infected with MRSA is a burden to hospital staff caring for them.	26	11.8	111	50.5	30	13.6	35	15.9	18	8.2
Patients colonized with MRSA probably have poor personal hygiene.	88	40.0	84	38.2	28	12.7	20	9.1	0	0.0
A patient with a MRSA infected wound should be nursed in a side ward.	52	23.6	85	38.6	33	15.0	41	18.6	9	4.1
Hospital staff should spend as little time as possible with patients with MRSA infection.	33	15.0	118	53.6	21	9.5	36	16.4	12	5.5
A patient with a MRSA infected wound does not make my job any more difficult.	20	9.1	56	25.5	43	19.5	67	30.5	34	15.5
One patient in my care with a MRSA infected wound takes up more of my time to the detriment of my other patients.	43	19.5	94	42.7	41	18.6	42	19.1	0	0.0
A patient being cared for in a Side room due to MRSA infection should be allowed to	31	14.1	90	40.9	55	25.0	36	16.4	8	3.6
use the bath/shower on the ward.										
A patient with a MRSA infected wound should not be allowed visitors.	60	27.3	130	59.1	15	6.8	15	6.8	0	0.0
I have received meaningful education regarding MRSA.	20	9.1	20	9.1	46	20.9	96	43.6	38	17.3

Figure-2: Total score attitude chart after the survey.

Practice and self-compliance toward MRSA infection:

Table 4 represents self-reported compliance with infection control measures among healthcare workers when dealing with patients with MRSA (Methicillin-resistant *Staphylococcus aureus*) infections. As for the measure of wearing gloves when entering a MRSA isolation room, 5 healthcare workers (2.3%) reported never complying, 8 (3.6%) reported rarely complying, 14 (6.4%) reported sometimes complying, 40 (18.2%) reported very often complying, and 153 (69.5%) reported always complying. Similarly, regarding wearing a gown when entering a MRSA isolation room, 22 healthcare workers (10.0%) reported never complying, 23 (10.5%) reported rarely complying, 32 (14.5%) reported sometimes complying, 44 (20.0%) reported very often complying, and 99 (45.0%) reported always complying. For the measure of performing hand hygiene before and after touching a patient with a MRSA infection, 14 healthcare workers (6.4%) reported never complying, 19 (8.6%) reported rarely complying, none (0.0%) reported sometimes complying, 12 (5.5%) reported very often complying, and

175 (79.5%) reported always complying. About 208 healthcare workers (94.5%) were found to be compliant, 7 (3.2%) were found to need review, and 5 (2.3%) were found to be not compliant. Overall, the data suggests that the majority of nurses workers are compliant with infection control measures when dealing with patients with MRSA infections (Fig. 3).

Table-4: Nurses' self- compliance for MRSA prevention.

Self-compliance	Never		Rarely		Sometimes		Very Often		Always	
	No	%	No	%	No	%	No	%	No	%
I wear gloves when entering a MRSA isolation room.	5	2.3	8	3.6	14	6.4	40	18.2	153	69.5
I wear a gown when entering a MRSA isolation room.	22	10.0	23	10.5	32	14.5	44	20.0	99	45.0
I perform hand hygiene before and after touching a patient with a MRSA infection	14	6.4	19	8.6	0	0.0	12	5.5	175	79.5

Figure-3: Total score of self-compliance chart.

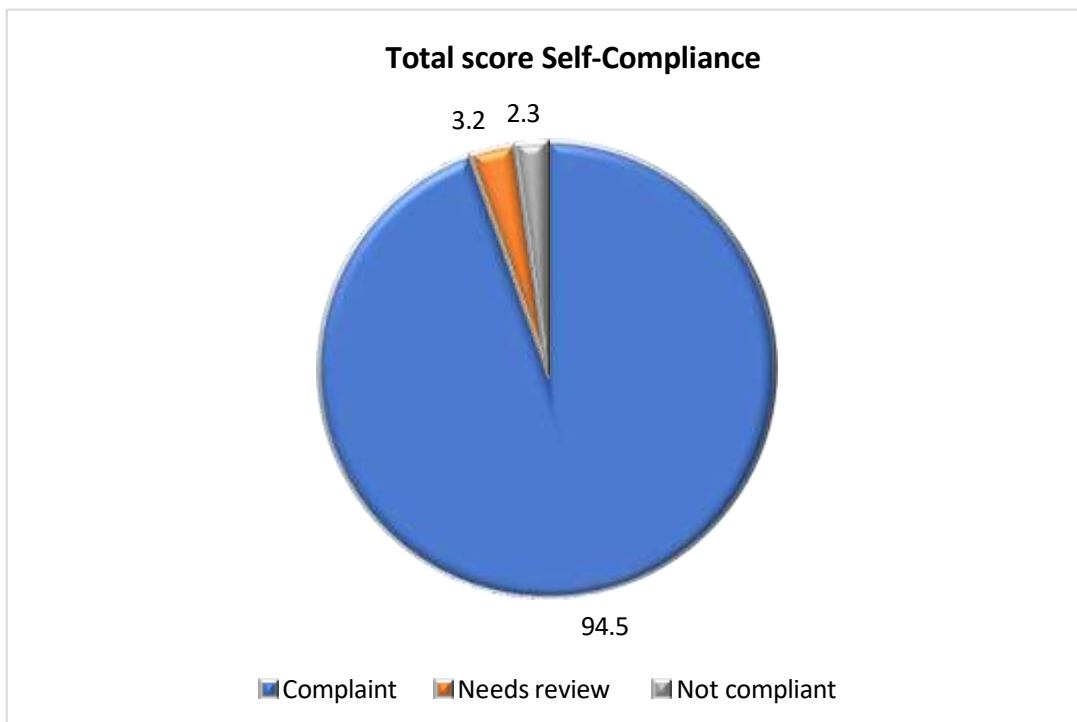


Table 5 presents data on the relationship between nurses' knowledge and various demographic characteristics. The results show that there are significant differences in nurses' knowledge based on their years of experience as an RN ($p=0.001$), their current work setting ($p=0.001$), and their level of education ($p=0.001$). However, there is no significant relationship between nurses' knowledge and their gender ($p=0.962$). In particular, nurses with more years of experience as an RN tend to have higher knowledge scores than those with less experience. Nurses working in acute care settings also tend to have higher knowledge scores than those working in other settings. Additionally, nurses with postgraduate education have higher knowledge scores than those with lower levels of education.

Table-5: Association between basic demographics and knowledge score.

Demographic data		Knowledge						Total	X ² P value
		Excellent “n=19”		Good “n=52”		Poor “n=149”			
Gender	No	%	No	%	No	%			
Male	3	15.8	8	15.4	21	14.1	32	0.078	
Female	16	84.2	44	84.6	128	85.9	188	0.962 N.S.	
Years as an RN									
< 5 yrs	5	26.3	7	13.5	105	70.5	117	208.357 0.001*	
6-10	0	0.0	2	3.8	31	20.8	33		
11-15	0	0.0	17	32.7	12	8.1	29		
16-20	6	31.6	26	50.0	1	0.7	33		
>20	8	42.1	0	0.0	0	0.0	8		
Current work setting									
Acute care	16	84.2	49	94.2	43	28.9	108	77.534 0.001*	
Outpatient	2	10.5	1	1.9	29	19.5	32		
Inpatient	0	0.0	2	3.8	32	21.5	34		
Home Health	0	0.0	0	0.0	16	10.7	16		
Other	1	5.3	0	0.0	29	19.5	30		
Educational status									
post graduate studies	12	63.2	2	3.8	41	27.5	55	49.876 0.001*	
Baccalaureate in nursing	7	36.8	48	92.3	70	47.0	125		
Diploma in nursing	0	0.0	2	3.8	38	25.5	40		

X² = Chi square test, P was significant if ≤ 0.05 . * Significant relation. N.S. Not significant

The results of the analysis show that there are significant differences in nurses' attitudes based on their years of experience as an RN ($p=0.001$), their current work setting ($p=0.001$), and their level of education ($p=0.001$). However, there is no significant relationship between nurses' attitudes and their gender ($p=0.842$). In particular, the data suggests that nurses with more years of experience as an RN tend to have more positive attitudes than those with less experience. Similarly, nurses working in acute care settings tend to have more positive attitudes than those working in other settings. Additionally, nurses with postgraduate education tend to have more positive attitudes than those with lower levels of education (Table. 6).

Table-6: Association between basic demographics and attitude score.

Demographic data	Attitude						Total	X ² P value
	Positive “n=66”		Neutral “n=118”		Negative “n=36”			
	No	%	No	%	No	%		
Gender								
Male	11	16.7	16	13.6	5	13.9	32	3.44
Female	55	83.3	102	86.4	31	86.1	188	0.842 N.S.
Years as an RN								
< 5 yrs	1	1.5	87	73.7	29	80.6	117	200 0.001*
6-10	0	0.0	30	25.4	3	8.3	33	
11-15	27	40.9	1	0.8	1	2.8	29	
16-20	31	47.0	0	0.0	2	5.6	33	
>20	7	10.6	0	0.0	1	2.8	8	
Current work setting								
Acute care	66	100.0	22	18.6	20	55.6	108	114.19 0.001*
Outpatient	0	0.0	26	22.0	6	16.7	32	
Inpatient	0	0.0	30	25.4	4	11.1	34	
Home Health	0	0.0	13	11.0	3	8.3	16	
Other	0	0.0	27	22.9	3	8.3	30	
Educational status								
post graduate studies	11	16.7	36	30.5	8	22.2	55	34.148 0.001*
Baccalaureate in nursing	54	81.8	48	40.7	23	63.9	125	
Diploma in nursing	1	1.5	34	28.8	5	13.9	40	

Table 7 presents an analysis of the relationship between nurses’ self-compliance and various demographic characteristics. The results of the analysis show that there is no significant relationship between nurses’ self-compliance and any of the demographic data (gender: $p=0.646$, years as an RN: $p=0.192$, current work setting: $p=0.895$, educational status: $p=0.231$). This means that these demographic factors do not appear to be significantly related to an individual’s self-compliance.

Table-7: Association between basic demographics and self-compliance score.

Table 7: Association between self basic demographics and self compliance score.									
Demographic data		Self-Compliance					Total	X ² P value	
		Complaint “n=208”		Needs revie w “n=7 ”		Not compliant “n=5”			
		No	%	No	%	No			%
Gender									
Male		31	14.9	1	14.3	0	0.0	32	0.873
Female		177	85.1	6	85.7	5	100.0	188	0.646 N.S.

Years as an RN								
< 5 yrs	105	50.5	7	100.0	5	100.0	117	11.174 0.192 N.S.
6-10	33	15.9	0	0.0	0	0.0	33	
11-15	29	13.9	0	0.0	0	0.0	29	
16-20	33	15.9	0	0.0	0	0.0	33	
>20	8	3.8	0	0.0	0	0.0	8	
Current work setting								
Acute care	101	48.6	4	57.1	3	60.0	108	3.552 0.895 N.S.
Outpatient	31	14.9	1	14.3	0	0.0	32	
Inpatient	33	15.9	1	14.3	0	0.0	34	
Home Health	15	7.2	0	0.0	1	20.0	16	
Other	28	13.5	1	14.3	1	20.0	30	
Educational status								
post graduate studies	52	25.5	2	28.6	0	0.0	55	5.602 0.231 N.S.
Baccalaureate in nursing	115	55.3	5	71.4	5	100.0	125	
Diploma in nursing	40	19.2	0	0.0	0	0.0	40	

Table-8: Association between knowledge category, attitude and compliance.

	Knowledge						Total	X ² P value
	Excellent “n=19”		Good “n=52”		Poor “n=149”			
	No	%	No	%	No	%		
Attitude								
Positive	12	63.2	44	84.6	10	6.7	66	147.2 0.001*
Neutral	0	0.0	0	0.0	118	79.2	118	
Negative	7	36.8	8	15.4	21	14.1	36	
Self-Compliance								
Complaint	19	100.0	50	96.2	139	93.3	208	4.477 3.45 N.S.
Needs review	0	0.0	0	0.0	7	4.7	7	
Not compliant	0	0.0	2	3.8	3	2.0	5	
Peer Compliance								
Complaint	13	68.4	51	98.1	147	98.7	211	46.893 0.001*
Needs review	1	5.3	1	1.9	1	0.7	3	

Not compliant	5	26.3	0	0.0	1	0.7	6	
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The results of the analysis indicate that there is a significant relationship between nurses knowledge levels and their attitudes ($p=0.001$). However, no significant relationship was found between nurses' knowledge levels and their self-compliance ($p=3.45$). In particular, the data suggests that nurses who have more positive attitudes tend to have higher knowledge scores than those with less positive attitudes.

Discussion:

Based on the findings of the present study, it has been observed that the level of knowledge among nurses is relatively low. Other studies conducted at Libya and Egypt showed the same aspects of low awareness levels [13, 15]. According to Herimat (2016), the researcher discovered that there is a significant lack of knowledge among workers regarding MRSA, with an approximate knowledge level of 60.7% with midwives and nurses demonstrated the lowest levels of knowledge, with only 25% and 54.2% respectively [16].

Also, a study conducted at a kidney services center revealed that the level of knowledge among nurses regarding the significance of preventing MRSA transmission prior to patient contact was found to be 32.7% [15]. In a separate investigation, it was discovered that within the cohort of staff nurses, 47.5% exhibited a level of knowledge that can be classified as moderate, while 50% demonstrated an insufficient level of knowledge. Additionally, a minority of 2.5% displayed a deficient level of knowledge [17]. Another study discovered that prior to the implementation of a structured teaching program, a majority of nurses (62%) possessed a moderate level of knowledge, while a significant proportion (26%) exhibited inadequate knowledge. Conversely, a minority (12%) demonstrated an adequate level of knowledge. Following the completion of the program, it was observed that 16% of participants possessed a moderate level of knowledge, while 12% exhibited inadequate knowledge. The majority, constituting 72% of the participants, demonstrated an adequate level of knowledge [18].

The majority of nurses workers are compliant with infection control measures when dealing with patients with MRSA infections. In the same respect, a study conducted revealed that nurses exhibited satisfactory understanding of Methicillin-resistant Staphylococcus aureus (MRSA), with the exception of a noticeable deficiency in knowledge pertaining to antibiotic treatment. However, their overall attitudes towards MRSA were predominantly favorable. Although a significant proportion of nurses demonstrated adherence to hand hygiene practices and the utilization of gloves, there was a notable deficiency in compliance among nurses regarding the use of gowns [14]. Another study revealed that although the participants exhibited a limited understanding of MRSA and its preventive measures, they demonstrated commendable adherence to MRSA prevention practices [15].

Nurses' knowledge and attitudes exhibit notable variations contingent upon their duration of experience as a registered nurse, their present occupational environment, and their educational attainment level. The existing correlation between knowledge and age may be attributed to the persistent increase in knowledge acquisition that occurs with advancing age and experience. Based on learning theory, individuals acquire knowledge and skills through visual observation and active engagement in practical activities [13]. Hence, the accumulation of years of experience leads to an increase in knowledge, which subsequently facilitates the application of acquired skills.

This finding aligns with the research conducted by Fadeyi (2010), which aimed to assess the level of awareness, knowledge, and attitude towards MRSA among nurses working in critical care units at a hospital in Nigeria. The study revealed a positive correlation between nurses' knowledge of MRSA and their age as well as their years of experience in critical care units [19]. Furthermore, a prior investigation revealed a positive association between the number of years of experience among staff nurses and their level of knowledge [20]. The factors that were observed to have an impact on the outcomes were as follows: nurses with a higher level of education, and nurses with a greater number of years of professional experience. Therefore, it can be inferred that there is a positive correlation between the number of years of experience in the nursing field and the level of knowledge regarding MRSA. Another study revealed a positive correlation between the years of experience of staff nurses and their level of knowledge [13, 20].

Conclusion

In conclusion, there are significant differences in nurses' knowledge and attitudes based on their years of experience as an RN, their current work setting, and their level of education. However, there is no significant relationship between nurses' knowledge or attitudes and their gender. Additionally, there is no significant relationship between nurses' self-compliance and any of the demographic data. These findings provide valuable insights into the factors that may influence nurses' knowledge levels and could be useful in developing strategies to improve knowledge among nursing staff. Based on these findings, further studies should focus on providing additional education and training to nurses with less experience, those working in settings other than acute care, and those with lower levels of education in order to improve their knowledge and attitudes. Additionally, other factors that may influence nurses' self-compliance should be addressed.

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Conflict of Interest

The authors declare they don't have any conflict of interest.

Author contributions

First draft of the manuscript was written by the first author and the cross-ponding author's supervisor it on very step. Every author helped write the document, collected data, made revisions, created tables, and got permission to submit it to a journal for publication.

Ethical Approval

The research study was reviewed and approved by the Institutional Review Board (IRB), General Directorate of Health Affairs in Madinah, Saudi Arabia (Approved IRB No. 23059). All participants provided written informed consent prior to their inclusion in the study.

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