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## **Nurses Practice regarding Prevention and Control of Nosocomial Infection at Medical Teaching Hospitals in Al-Najaf Al-Ashraf.**

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### **Abstract**

Nosocomial Infection is defined by the World Health Organization (WHO) in a variety of ways. The easiest is nosocomial Infections, which are infections acquired in a hospital by a patient who is admitted for a reason other than the one for which he or she is admitted. It's also defined by WHO as an infection that infects a patient in a hospital or other health-care facility where it wasn't present or incubating at the time of admission. Infections acquired in the hospital, as well as signs and symptoms experienced during hospitalization or after release, are included. Moreover, A large and growing body of literature has investigated that the occupational infection may also impact the facility's staff

This study aimed to evaluate the level of nurses practice about prevention and control of nosocomial infection at Medical Teaching Hospitals.

A descriptive design cross –sectional study was used to evaluate a nurses practice regarding prevention and control of nosocomial infection. Also, this study was conducted in Al-Najaf teaching hospitals for period from (1<sup>th</sup> November ,2021 to 18<sup>th</sup> Julay ,2022).

In this study, the sample has been acquired non- probability sample (convenient). In addition, sample was selected to obtained representative and accurate data (494) nurse working Al-Najaf teaching hospitals.

The inferential statistical data analysis approaches were used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (22), and the Microsoft excel (2010).

The study results revealed that more than to third of sample have moderate level of practice. the results found a high significant nurses practice regarding prevention and control nosocomial infection workplace and hospital.

Based on the findings of the current study, it can be concluded that nurses in hospitals teaching have a moderate level of practice regarding prevention and control nosocomial infection.

The findings of this study recommend to the infection control team must closely monitor nurses performance and use of infection control standard precautions, as well as address any substandard practices.

## **1.1 Introduction**

The definition of a healthcare-associated infection (HCAI) is referred to as an infection that occurs to a patient during the provision of healthcare to the patient or any other healthcare facility that does not exist or is incubated at the time (1).

Nurses must be well-versed in the essential components of infection prevention and control, which must be applied to all patients, including adults, children, and newborns. These precautions include hospital hygiene, adequate hand hygiene, and proper use of personal protective equipment, as well as adherence to asepsis principles and safe sharps disposal (2).

Hospital acquired infections (HAIs) are a public health concern because they increase mortality and morbidity, prolong hospital stays, and lead to higher health care

costs. Early detection and diagnosis of HAI based on specific definitions is a first step in effective management of the condition. In the United States, HAI needs an additional 16 million inpatient days each year, with expenditures of up to 7 billion euros annually. They should be recorded on an ongoing basis for a better understanding of the scale of events and the strict use of relevant preventive measures (3).

WHO estimates that every year, at least 8-16 million HBV infections, 2.3-4.7 million HCV infections, and 160,000 HIV/AIDS infections are caused by unsafe injections and needle stick injuries around the world. According to the World Health Organization, at least half of the 12 billion injections given each year in developing nations are unsafe, posing a severe health risk to patients, health workers, and the general public. Sharp instrument injuries have been linked to the spread of more than 40 infections, including the hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV (4).

Personal protective equipment such as gloves, gowns, and face masks in addition to breathing and cough etiquette are global standards for infection control measures. Thus, medical waste management, safe injection methods, safe handling of potentially contaminated equipment or surfaces, as well as cleaning and sterilize patient care equipment, all that must be taken in the mind. That is because even in the most extreme conditions, infection control techniques reduce the potential for pathogens to be transmitted from one person or area to another (5).

Nurses are the largest treatment team in hospitals, on the other hand, nurses' practice regarding health conditions plays an essential role in ensuring the health of people and society ultimately, nurses' practice positively affects their performance (6).

## **Objective the study:**

1.To Evaluate the level of nurses practice about prevention and control of nosocomial infection at Medical Teaching Hospitals

2. To identify the relationship between nurses practice regarding prevention and control of nosocomial infection and their demographic characteristics of age, gender, education and training,

## **2.Methodology**

### **2.1 The Study Design**

A descriptive design cross –sectional descriptive study was used to evaluate a nurse’s practice relation of nosocomial infection measures. The period of the study is from (1<sup>th</sup> November ,2021 to 18<sup>th</sup>Julay ,2022).

### **2.2The Setting of the Study:**

The study was conducted in Al-Sadder Teaching Hospital and Al-Furat Teaching Hospital and Al-Zahra Teaching Hospital at the Al-Najaf Al-Ashraf . And data were collected from different area in hospital, Medical wards and Surgical wards from the general.

### **2.3. Sampling of the Study**

A non- probability sampling technique (convenient) sample was selected to obtained representative and accurate data. From ( 494 ) nurses working at ICU, ER, Medical wards, Surgical wards, pediatric, neonatal, operational wards , Outpatient , Delivery Room and Maternity wards From ( 200 ) nurses working at Al-Sadder Teaching Hospital and From (152 ) nurses working at Al-Furat Teaching Hospital and From ( 142) nurses working Al-Zahra at Teaching Hospital, ( 50) nurses were excluded from the (nurses for the pilot study, and The nurses working in the administration , Nurses with less than one year experience).the sample size of nurses in each hospital taken into concept.

### **2.4. Data Collection:**

The data has been collected through the utilization of the developed questionnaire after the validity and reliability are estimated the data was collected by using the tow technique interview and questionnaire by using the Arabic version of the

questionnaire and they are in a similar way, by the same questionnaire for all those subjects who are included in the study sample. The data collection process has been performed from (14<sup>th</sup> December 2021 to 14<sup>th</sup> March 2022).

## 2.5. Statistical Analysis:

The following statistical data analysis approaches is used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (22), and the Microsoft excel (2010).

## 3. Results:

A total of 494 nurses were included in the study sample, their demographic data are presented in **table (1)**, this table shows that the more than half of the study sample is female (54.3%) with ages ranging between 25-29 years (34.6%). Also, the result in this table above showed that the highest proportion of nurses work in Al-Sadr teaching hospital (40.5%). Moreover, more than half (52%) of them are had academic qualification of diploma degree (44.5%), (50.4%) of nurses have less than 5 years of experience. Finally, the same table revealed that the more than half of nurses have not participated in training regarding (52.6 %), while (42.7%) have took part in 1-3 training courses.

Regarding **table (2)**, it explains ANOVA table for the association between the overall assessment of nurses' practice regarding infections and their demographic data. According to this table, there is a significant relationship ( $P < 0.05$ ) between nurses' practice and the following demographic variables: hospitals, area of workplace

The post hoc analysis has shown that there is a significant difference ( $P < 0.05$ ) between nurses' practice working in Al-Sadr, Al-Furat and Al-Zahra teaching hospitals, recording means of scores: 2.35, 2.22 and 2.17 respectively.

Regarding the area of workplace, the highest mean of scores for practice about prevention and control of nosocomial infection were seen in nurses working in surgical wards ( $MS = 2.35$ ) which was significantly different from nurses working in

the other wards (operation room, delivery room, medical ward, emergency, pediatric ward, and gynecology) ; while the lowest mean of scores for practice about prevention and control of nosocomial infection were seen in nurses working in delivery room (MS= 2.15) which was significantly different from nurses working in the all other wards.

The table , Figure (1) explains about nurses' practice and descriptive statistics regarding prevention and control of nosocomial infection The responses to general practice questions regarding prevention and control of nosocomial infection are shown in this table. This shows that the majority of the items have moderate assessment regarding practice about prevention and control of nosocomial infection including the items numbered (6,8,11-18), the rest items have good practice assessment, while no item was recorded with poor practice assessment.

## **4. Discussion of the Study Findings:**

### **4.1. Discussion of the Association between the overall Nurses practice regarding prevention and control of nosocomial infection and their demographic data (Table 2).**

The study results show that there is highly significant association between nurses practice on infection control measures and area of workplace at p-value (0.000), and this result explain a strong association with surgical ward. This relate the nurses in the surgical ward are in touch with the patient and always deal with open wounds and always use the standards of aseptic technique in dealing with hospital infections. While providing nursing care, they always expect an infection while dealing with open wounds and also while dressing wounds.

The study results show that there is highly significant association between nurses practice on infection control measures and hospital at p-value (0.000). This is because most of the sample was from Al-Sadr Hospital. This study produced results

which corroborate the findings of a great deal of the previous work in this field some important of them are (7, 2).

## 5. Conclusion

The following conclusions can be drawn from the present study that most the nurses have moderate practice about prevention and control of nosocomial infection. Taken together, these results therefore suggest that nurses should need to use aseptic technique and continuous follow in addition to use standard precaution. The nurses who work in AL-Sadder hospital and AL-Furat hospital have more practice than the other remaining hospital.

## 6. Recommendations

The infection control team must closely monitor nurses performance and use of infection control standard precautions, as well as address any substandard practices, nursing staff should use personal protective equipment to protect themselves, According to the study, nursing leaders can improve hand-washing compliance among all health-care workers by establishing an organizational culture of expected compliance, promoting role models, providing ongoing educational sessions, providing ongoing feedback on hand-washing through monitoring, and ensuring the availability of necessary resources.

**Table (1) Descriptive statistics (frequency and percentage) for the demographic data of nurses**

Demographic data		Frequency (N=494)	Percentage
Gender	Male	226	45.7
	Female	268	54.3
<b>Total= 494</b>			
Age / years	20-24	124	25.1
	25 – 29	171	34.6
	30 – 34	58	11.7
	35-39	54	10.9
	40-44	48	9.7
	45-49	23	4.7

	≥ 50	16	3.2
<b>Total= 494</b>			
Hospitals	Al-Sadr	200	40.5
	Al-Furat Al-Awsat	152	30.8
	A-Zahraa	142	28.7
<b>Total= 494</b>			
Area of Workplace	Operation Room	63	12.8
	Delivery Room	31	6.3
	Surgical Ward	69	14.0
	Medical Ward	35	7.1
	Emergency	109	22.1
	Pediatric Ward	60	12.1
	CCU & RCU	55	11.1
	Gynecology	72	14.6
<b>Total= 494</b>			
Level of Education	Secondary school of nursing	114	23.1
	Diploma	220	44.5
	Bachelor	160	32.4
<b>Total= 494</b>			
Years of experience	< 5	249	50.4
	5-10	115	23.3
	11-15	40	8.1
	16-20	50	10.1
	> 20	40	8.1
<b>Total= 494</b>			
Training	Yes	234	47.4
	No	260	52.6
<b>Total= 494</b>			
No. of Training Courses	0	260	52.6
	1-3	211	42.7
	≥ 4	49	9.9
<b>Total= 494</b>			

**Table (2) ANOVA table for the Association between the overall Assessment of Nurses' practice Regarding Nosocomial infection and their demographic data**

Demographic data	Sub-groups	MD	SD	F	P Value
Gender	Male	2.27	0.19	1.17	0.28
	Female	2.25	0.20		
Age / years	20-24	2.26	0.20	0.20	0.98
	25 – 29	2.26	0.19		
	30 – 34	2.25	0.21		
	35-39	2.26	0.18		
	40-44	2.27	0.19		
	45-49	2.23	0.20		
	≥ 50	2.23	0.22		



Hospitals	Al-Sadr	2.35	A	0.18	47.53	0.000
	Al-Furat Al-Awsat	2.22	B	0.19		
	A-Zahraa	2.17	C	0.17		
Area of Workplace	Operation Room	2.23	A	0.13	6.05	0.000
	Delivery Room	2.15	B	0.20		
	Surgical Ward	2.36	C	0.18		
	Medical Ward	2.25	A	0.17		
	Emergency	2.24	A	0.19		
	Pediatric Ward	2.22	A	0.21		
	CCU & RCU	2.32	C	0.19		
	Gynecology	2.25	A	0.22		
Level of Education	Secondary school of nursing	2.26		0.21	0.00	1.00
	Diploma	2.26		0.20		
	Bachelor	2.26		0.18		
Years of experience	< 5	2.25		0.20	1.7	0.12
	5-10	2.28		0.18		
	11-15	2.24		0.22		
	16-20	2.23		0.20		
	> 20	2.26		0.19		
Training	Yes	2.25		0.19	0.09	0.76
	No	2.26		0.20		
No. of Training Courses	0	2.26		0.20	0.23	0.79
	1-3	2.26		0.20		
	≥ 4	2.24		0.19		

A,B,C : Different letters refer to significant difference at P value <0.05

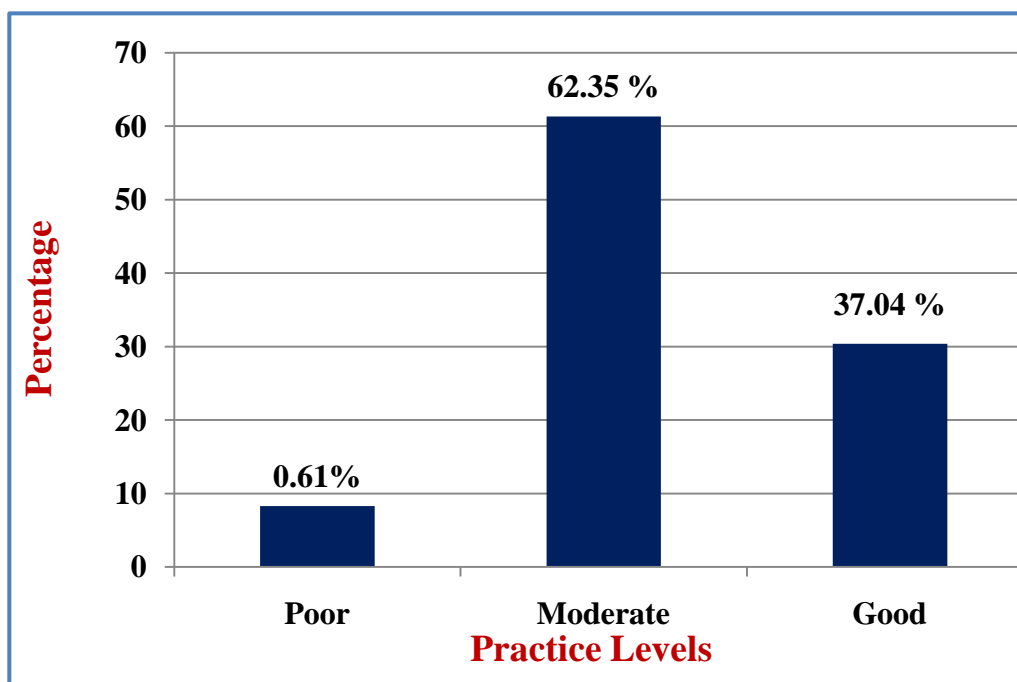
**Table (3) Assessment and mean of scores of nurses' practice regarding prevention and control of nosocomial infection**

Items	Groups	Freq.	Percent	MS	SD	Assessment
1. Do You follow the recommended guidelines for use of alcohol based solutions or other antiseptics before opening vascular access equipment	Never	40	8.1	2.57	0.64	Good
	Sometimes	133	26.9			
	Always	321	65.0			
2. Do You wash your hands or rub with alcohol based solution or other antiseptics before and after providing a nursing procedure?	Never	38	7.7	2.64	0.62	Good
	Sometimes	101	20.4			
	Always	355	71.9			
3. Do You wash your hands before and after having direct	Never	26	5.3	2.51	0.60	Good
	Sometimes	191	38.7			
	Always	277	56.1			

<b>contact with patient's intact skin?</b>						
<b>4. Do You wash your hands when moving from a contaminated body site to a clean-body site during patient care?</b>	Never	57	11.5	2.39	0.69	Good
	Sometimes	185	37.4			
	Always	252	51.0			
<b>5. Do You wash your hands after touching inanimate surfaces and objects in patient's surroundings?</b>	Never	43	8.7	2.46	0.65	Good
	Sometimes	181	36.6			
	Always	270	54.7			
<b>6. Do You remove your rings, watch or bracelet before beginning hand hygiene?</b>	Never	65	13.2	2.33	0.71	Moderate
	Sometimes	180	36.4			
	Always	249	50.4			
<b>7. The routine hand washing include rubbing hands together and rubbing palms and backs of hand ,fingers, spaces between fingers, and wrists?</b>	Never	48	9.7	2.44	0.66	Good
	Sometimes	179	36.2			
	Always	267	54.0			
<b>8. I am less compliant with recommended guidelines for reducing transmission of NI when workload increases or I emergencies</b>	Never	85	17.2	2.21	0.72	Moderate
	Sometimes	220	44.5			
	Always	189	38.3			
<b>9. The patient's waste containing blood is considered contaminated waste</b>	Never	51	10.3	2.56	0.67	Good
	Sometimes	115	23.3			
	Always	328	66.4			
<b>10. gloves or other personal protective equipment are required to ensure safety while handling waste</b>	Never	53	10.7	2.48	0.68	Good
	Sometimes	151	30.6			
	Always	290	58.7			
<b>11. A special road for waste must be prepared inside the hospital to avoid the passage of medical waste through patient care areas</b>	Never	74	15.0	2.33	0.72	Moderate
	Sometimes	180	36.4			
	Always	240	48.6			
<b>12. Do you avoid touching nursing equipment without wearing non-sterile gloves</b>	Never	78	15.8	2.22	0.70	Moderate
	Sometimes	228	46.2			
	Always	188	38.1			
<b>13. Do you avoid touching the patient without wearing non-sterile gloves</b>	Never	72	14.6	2.25	0.69	Moderate
	Sometimes	227	46.0			
	Always	195	39.5			
<b>14. The process of wearing gloves is not a compensation for the process of washing hands</b>	Never	97	19.6	2.22	0.75	Moderate
	Sometimes	191	38.7			
	Always	206	41.7			
<b>15. Personal eyeglasses or contact lenses are not considered adequate protection for the eyes</b>	Never	110	22.3	2.17	0.77	Moderate
	Sometimes	190	38.5			
	Always	194	39.3			

<b>16. Do you use gloves once for pulling blood, installation canola, suction secretions, and when coming into contact with blood and body fluids of the patient and injection</b>	Never	108	21.9	2.22	0.78	Moderate
	Sometimes	168	34.0			
	Always	218	44.1			
<b>17. Do not return the Needle or flex for the purpose of disposal of it</b>	Never	111	22.5	2.19	0.78	Moderate
	Sometimes	177	35.8			
	Always	206	41.7			
<b>18. Do not leave the used sharp object for another worker to throw it and dispose of it</b>	Never	79	16.0	2.33	0.74	Moderate
	Sometimes	162	32.8			
	Always	253	51.2			
<b>19. Vaccination provides protection against viral hepatitis</b>	Never	48	9.7	2.53	0.67	Good
	Sometimes	135	27.3			
	Always	311	63.0			
<b>Total Practice Assessment</b>						

MS : Mean of Scores ; SD : Standard Deviation ; Poor : MS = 1-0.66 ; Moderate : MS =1.67-2.33 ; Good : MS≥2.34



**Figure (1) : Percentage of nurses according to their overall practice assessment about prevention and control of nosocomial infection**

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