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

1st Amar Yahia Ahmed amaramar19791979@gmail.com
2nd Fatima Wanas Khudair.
3rd Ohood Aqeed Radhi.

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 knowledge about prevention and control of nosocomial infection at Medical Teaching Hospitals.

A descriptive design cross –sectional study was used to evaluate a nurses knowledge regarding prevention and control of nosocomial

infection. Also, this study was conducted in Al-Najaf teaching hospitals for period from (1ᵗʰ November ,2021 to 18ᵗʰJulay ,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 knowledge. the results found a high significant nurses knowledge regarding prevention and control nosocomial infection workplace and hospital. In addition, the results found a high significant nurses knowledge regarding prevention and control nosocomial infection and years' experience.

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

The findings of this study recommend to the study suggested that nurses should receive more training in infection control methods.

1.1 Introduction

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 (1).

Nosocomial infections are a major challenge for all health systems, especially patients with severe illness and weakened immune systems, because therapeutic contexts, especially those based on interventions, increase complications, mortality, and length of hospital stay, as well as financial costs. In hospitals, HCAI prevention and control is critical to reducing costs and delivering positive outcomes (2).

According to the Centers for Disease Control and Prevention (CDC), around 1.7 million hospital-associated infections caused or contributed to 99,000 fatalities each year. Moreover, according to some estimates, 10% of patients, or 2 million, become infected each year, with yearly costs ranging from $4.5 billion to $11 billion. Urinary tract infection is the most common type of hospital infection in the United States (thirty six percent), followed by surgical site infection (twenty percent), bloodstream infection (Eleven percent), and pneumonia (both Eleven percent) (3).

Nosocomial infections are a global problem, a major community health problem affecting millions of individuals each year, and nosocomial infections are a major public health problem that has a significant impact on morbidity, mortality and quality of life. It also represents an important economic cost to health systems around the world. According to the World Health Organization (WHO) reports in 2011, (7percent) of patients in developed countries and (15percent) in poor countries suffer from hepatitis C in any time (4).

Hospital health workers, especially nurses, play an important role in spreading infection and are essential in the supervision and control of infection in a hospital. Therefore, nurses must have the correct, updated and appropriate scientific knowledge regarding the types of hospital infections and their control, their impact on hospitalized patients, the number of deaths and the increase in hospital costs, the identification of individuals at risk, and the addition of prevention and control standards (5).

Nurses are health care professionals whose job is to keep patients safe from infection while they are in a hospital or healthcare setting. The patient will be helped to recover and high quality nursing care will be provided by maintaining an infection-free environment. The nurse spends most of her time with patients. As a result, they must have a thorough understanding of knowledge about hospital-acquired infection prevention and control measures in healthcare settings (6).

Objective the study:

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

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

2.Methdology

2.1 The Study Design

A descriptive design cross –sectional descriptive study was used to evaluate a nurse's knowledge relation of nosocomial infection measures. The period of the study is from (1th November ,2021 to 18thJulay ,2022).

2.2 The 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 (14th December 2021to 14th 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' knowledge regarding infections and their demographic data . According to this table, there is a significant relationship ($P<0.05$) between nurses' knowledge and the following demographic variables : hospitals, area of workplace and years of experience.

The post hoc analysis has shown that nurses in Al-Zahra teaching hospital have the lowest mean of scores for nurses' knowledge about prevention and control of nosocomial infection (MS= 0.53) which was significantly different from that obtained in Al-Sadr and Al-Furat hospitals .

Regarding the area of workplace, the highest mean of scores for knowledge about prevention and control of nosocomial infection were seen in nurses working in CCU & RCU (MS= 0.65) which was significantly different from nurses working in the other wards (surgical ward, medical ward, emergency and gynecology) ; while the lowest mean of scores for knowledge about prevention and control of nosocomial infection were seen in nurses working in emergency (MS= 0.52) which was significantly different from nurses working in the other wards (operation room, delivery room, surgical ward, pediatric, CCU & RCU and gynecology).

Concerning the years of experience, the highest mean of scores for knowledge about prevention and control of nosocomial infection were seen in nurses with 5-10 years of experience (MS= 0.61) which was significantly different from other subgroups of nurses.

The **table (3),**Figure (1) shows about nurses' knowledge and descriptive statistics regarding prevention and control of nosocomial infection. The responses to general knowledge questions regarding prevention and control of nosocomial infection are shown in this table. This shows that the assessment was (poor) for the item numbered (3,5,6), while the assessment of the nurses' knowledge was (moderate) regarding prevention and control of nosocomial infection for the items numbered (1,2,4,7-11,16,17,23-25) their Knowledge is poor, while for the rest items have good knowledge .

4. Discussion of the Study Findings:

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

The results indicate that knowledge is highly significant associated with infection control measure and the area of working place, which recorded a value of (0.000). This value appeared higher in RCU and CCU because this relate to the professional qualification that consider as attribute to the worker of such areas.

The study results show that there is highly significant association between nurses knowledge 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 (7,8).

Moreover, the present study results show that there is a significant relationship between nurses knowledge toward prevention and control nosocomial infection and years of experience at p-value (0.05). This study confirms that the more the years of experience are the more information and knowledge. This result is associated with (9,10).

On the other hand, the study results show that there is no significant relationship between nurses knowledge regarding prevention and control nosocomial infection and nurses demographic data in related to (age, gender, level of education, training). The results of present study are supported by other studies that reached same our results (11.12.13).

The study results show that there is a high significant relationship between nurses knowledge toward prevention and control nosocomial infection and hospital. The study result is consistent with the study of (14, 8).

5. Conclusion

The sample of nurses in hospitals teaching have moderate level of knowledge level regarding prevention and control nosocomial infection, the nurses who work in critical area such CCU and RCU have a good knowledge more than in other workplace, the years of experience have positive effect on nurses knowledge level regarding prevention and control nosocomial infection.

6. Recommendations

The study suggested that nurses should receive more training in infection control methods, And a 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
Total= 494			
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
Total= 494			
Hospitals	Al-Sadr	200	40.5
	Al-Furat Al-Awsat	152	30.8
	A-Zahraa	142	28.7
Total= 494			
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
Total= 494			
Level of Education	Secondary school of nursing	114	23.1
	Diploma	220	44.5
	Bachelor	160	32.4
Total= 494			
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
Total= 494			
Training	Yes	234	47.4
	No	260	52.6
Total= 494			
No. of Training Courses	0	260	52.6
	1-3	211	42.7
	≥ 4	49	9.9
Total= 494			

Table (2) ANOVA table for the Association between the overall Assessment of Nurses' Knowledge Regarding infections and their demographic data

Demographic data	Sub-groups	MD	SD	F	P Value
Gender	Male	0.57	0.15	0.64	0.42
	Female	0.58	0.16		
Age / years	20-24	0.59	0.14	1.7	0.12
	25 – 29	0.58	0.15		
	30 – 34	0.56	0.18		
	35-39	0.55	0.13		
	40-44	0.61	0.17		
	45-49	0.51	0.16		
	≥ 50	0.59	0.14		
Hospitals	Al-Sadr	0.59 **A**	0.13	10.4	0.000
	Al-Furat Al-Awsat	0.60 **A**	0.13		
	A-Zahraa	0.53 **B**	0.20		
Area of Workplace	Operation Room	0.60 **AC**	0.18	4.4	0.000
	Delivery Room	0.59 **AC**	0.15		

	Surgical Ward	0.57 **A**	0.13		
	Medical Ward	0.55 **AB**	0.16		
	Emergency	0.52 **B**	0.16		
	Pediatric Ward	0.60 **AC**	0.16		
	CCU & RCU	0.65 C	0.12		
	Gynecology	0.57 **AB**	0.14		
Level of Education	Secondary school of nursing	0.57	0.15		
	Diploma	0.58	0.15	0.19	0.82
	Bachelor	0.57	0.16		
Years of experience	< 5	0.57 A	0.15		
	5-10	0.61 **B**	0.16		
	11-15	0.56 A	0.14	2.34	0.05
	16-20	0.55 A	0.14		
	> 20	0.56 **A**	0.17		
Training	Yes	0.57	0.15	0.01	0.92
	No	0.58	0.16		
No. of Training Courses	0	0.58	0.15		
	1-3	0.58	0.15	1.34	0.26
	≥ 4	0.54	0.17		

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

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

No.	Items	MS	SD	Assess.
1	Hospital infection or hospital acquired infection is defined as	0.60	0.49	Moderate
2	The main purpose of prevention and control of nosocomial infection measures is to:	0.44	0.50	Moderate
3	What is the first element for fighting an infection:	0.18	0.38	Poor
4	It is considered one of the most important causes of transmission the disease or infection to the other person except:	0.42	0.49	Moderate
5	An example of indirect contact with a pathogen is:	0.31	0.46	Poor
6	It is considered one of the most common methods of spreading infection in hospitals:	0.19	0.39	Poor
7	Is the process removing and destroying harmful organisms to a minimum at tools and equipment are safe to use :	0.51	0.50	Moderate
8	Initially, the nurse should wash hands if:	0.65	0.70	Moderate
9	is important to wash hands and keep them clean for:	0.57	0.49	Moderate
10	The nurse rubs hands for 10-20 seconds using alcohol to reduce germ if:	0.59	0.49	Moderate
11	Routine hand washing with soap and water takes time:	0.42	0.49	Moderate
12	Among the things the nurse must follow when dealing with an isolated patient:	0.76	0.43	Good
13	When leaving the isolated patient room. the nurse must:	0.75	0.43	Good
14	Among the isolation precautions:	0.77	0.42	Good
15	Pulmonary TB (tuberculosis) is transmitted by	0.46	0.66	Moderate
16	Highly contaminated waste is placed in a color hag or plastic container:	0.51	0.69	Moderate
17	Infectious and sharp wastes are placed in a colorful plastic container or bag:	0.68	0.47	Good
18	Among most important acute tools that cause disease and infection transmission:	0.80	0.40	Good
19	Sharps that must be safely disposed of are:	0.83	0.38	Good
20	Personal protective equipment For the nurse, includes:	0.86	0.35	Good
21	To Gloves (paws) should be worn when:	0.80	0.40	Good

22	The nurse must wear a surgical gown if:	0.72	0.45	Good
23	Among the most important vaccines that are recommended for Nurses or health workers:	0.51	0.50	Moderate
24	In the event of an error in placing hazardous medical waste bag or the packaging not designated for it, it must:	0.45	0.50	Moderate
25	The place where the disease-causing organisms live and multiply:	0.61	0.49	Moderate
Total Knowledge Assessment		**0.58**	**0.48**	**Moderate**

MS : Mean of Scores ; SD : Standard Deviation ; Poor : MS = 0-0.33 ; Moderate : MS =0.34-0.66 ; Good : MS≥0.67
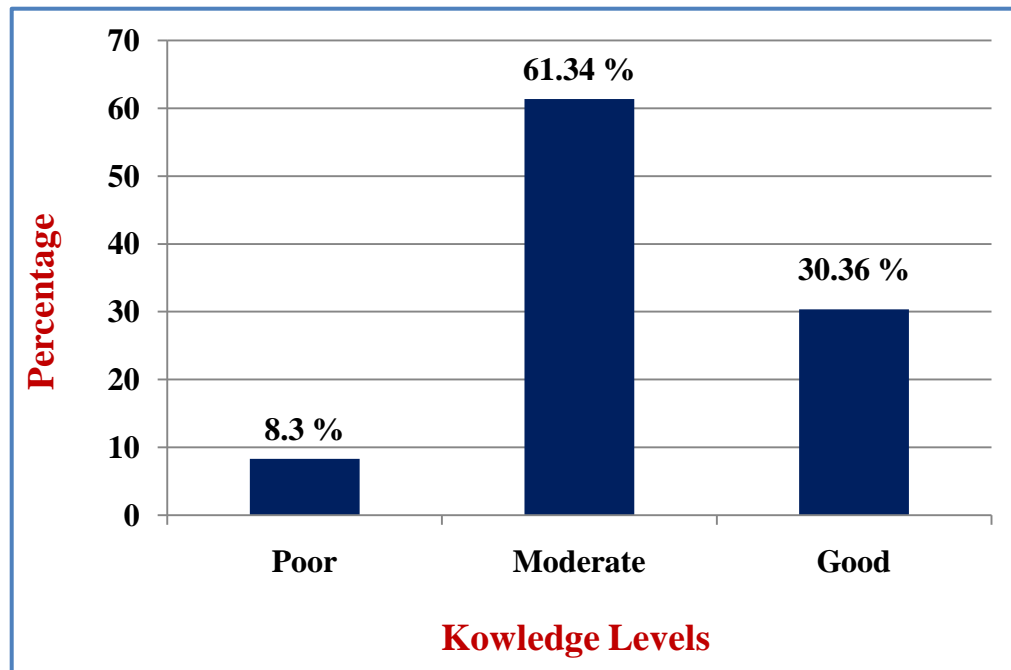

Figure (1) : Percentage of nurses according to their overall knowledge assessment about prevention and control of nosocomial infection

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