Knowledge and Attitude of Nurses about Infection Preventive Measures at Imam Al-Sadiq Hospital in Babil City

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ABSTRACT

Background: Nurses play a significant part in avoiding and managing the transmission of an illness. All nurses show leadership in infection prevention control by implementing appropriate and prompt infection control measures utilizing their knowledge, skills, and judgments in all roles and settings.

Study aims: The aims of study to evaluate knowledge and attitude of nurses about infection preventive measures, and to describe relationship between socio-demographic characteristics and nurses level of knowledge and attitude.

Material and Method: A cross-sectional descriptive study design included (320) of nurses staff selected from Imam Al-Sadiq Hospital in Babil City. Sampling technique were non-probability (convenience sample). Data collection was through direct interview technique with each participant from March 2022 to July 2022. Study instrument was included socio-demographic, knowledge and attitude of nurses. Data analysis was used statistical package of social sciences (SPSS) ver. (25), which included frequency, percent and Chi-square.

Results: Almost of items related to knowledge and attitude of nurses about infection prevention measures the answer were know and always. Highly statistical significant association between items related to the knowledge and attitude of nurse's with age, gender, educational level, experience years, catch communicable disease.

Conclusion: Study concluded that knowledge of nurses were good and their attitude were not good, as well as found highly statistical significant relationship between items related to the knowledge and attitude of nurses and socio-demographic characteristics.

Keywords: Knowledge, Attitude, Nurses, Infection, Preventive Measures .

معارف ومواقف الممرضين حول الإجراءات الوقائية ضد العدوى فى مستشفى الإمام الصادق فى مدينة بابل

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الخلاصة

الخلفية: يلعب الممرضين دوراً مهماً في تجنب وإدارة انتقال المرض. حيث يظهر جميع الممرضين القيادة في مكافحة العدوى من خلال تنفيذ تدابير مناسبة وسريعة لمكافحة العدوى باستخدام معارفهم ومهاراتهم واحكامهم في جميع الأدوار والأوضاع.

أهداف الدراسة: تهدف هذه الدراسة الى تقييم معارف ومواقف الممرضين حول الاجراءات الوقائية للعدوى, ولوصف العلاقة بين الخصائص الاجتماعية-الديموغرافية ومعارف ومواقف الممرضين

المادة والطريقة: دراسة وصفية مقطعية تضمنت (٣٢٠) ممرضاً تم اختيارهم من مستشفى الإمام الصادق في مدينة بابل. وكانت تقنية أخذ العينات لاختيار الممرضين غير احتمالية (عينة ملائمة)، وتم جمع البيانات من خلال أسلوب المقابلة المباشرة من قبل الباحث مع كل مشارك من الممرضين الذي استمر من أذار ٢٠٢٢ إلى تموز ٢٠٢٢. واستخدمت أداة الدراسة الاستبيان الذي تضمن الخصائص الاجتماعية والديموغرافية ومعارف ومواقف الممرضين. تم استخدام تحليل البيانات باستخدام الحزمة الإحصائية (SPSS) الإصدار. (٢٥), التي تضمنت توزيع التكرارات، النسبة المئوية ومربع كاي.

النتائج: أوضحت النتائجُ أن تقريباً العناصر المتعلقة بمعارف ومواقف الممرضين بإجراءات الوقاية من العدوى كانت أغلب إجاباتهم اعرف ودائما. واوضحت ان هناك علاقة ذات دلالة احصائية بين العناصر المتعلقة بمعارف ومواقف الممرضين مع العمر والجنس والمستوى التعليمي وسنوات الخبرة والإصابة بالأمراض المعدية.

الاستنتاج: بينت الدراسة أن معارف الممرضين كانت جيدة وأن مواقفهم لم تكن جيدة ، وكذلك وجدت علاقة ذو دلالة إحصائية بين العناصر المتعلقة بمعارف ومواقف الممرضين مع الخصائص الاجتماعية والديموغرافية.

الكلمات المفتاحية: المعارف ، المواقف ، الممرضين ، العدوى ، الإجراءات الوقائية.

INTRODUCTION

Infected people can spread infections to other patients, medical personnel, and visitors in hospitals[1]. Health care-related infections are acknowledged as a critical global public health issue because they significantly affect the rates of morbidity and death both inside and outside of hospitals, increasing the length of stay and hospitalization expenditures[2]. Due to increased hospitalization and poor prognosis, nosocomial infection also known a hospital acquired infections, is one of the main causes of death and has a high economic cost [3]. Infection management and prevention are essential for a healthy healthcare system[4]. According to the World Health Organization (WHO), infection prevention control procedures work to safeguard people at risk of contracting an infection in public and hospitals while seeking treatment for conditions. According to reports, taking the usual precautions will help you avoid both occupational exposure incidents and the infections that go along with them. Hygiene is one of the fundamental concepts of infection prevention and control[5].

Through use conventional precautions and upkeep of healthcare environment, nurses play a significant part in avoiding and managing the transmission of an illness. All nurses show leadership in infection prevention control by implementing appropriate and prompt infection control measures utilizing their knowledge, skills, and judgment in all roles and settings[1].

According to WHO, nurses have a variety of roles in infection control. Various nurses, including the nursing administrator, the charge nurse for the unit, and the infection control nurse. Additionally, control committee needs to establish for creating nursing training programs and overseeing the use of infection prevention strategies[6]. Healthcare-associated infections (HAIs) are a widespread global problem that primarily affects low- and middle-income nations. According to estimates, 10% of hospitalized patients in affluent countries and 25% of those in developing nations contract HAIs, which has a negative impact on healthcare by lengthening hospital stays, increasing financial burden, and increasing morbidity and death. Over 90% of these illnesses occurred in developing nations, where they are unevenly distributed. Due to scarce resources, unsanitary environments, and inadequate hygiene standards, a consistent infection control program was overlooked, which is what caused the high prevalence of HCAIs[7].

Patients may contract an infection from nurses and other healthcare professionals. On the other hand, healthcare professionals like nurses are frequently exposed to harmful (disease causing microorganisms). Due to the recapping of needles and sharps, healthcare professionals have frequently been exposed to blood-borne illnesses, particularly hepatitis B, C, and HIV. According to data published in a WHO report from 2002, occupational exposure is to blame for 2.5% of HIV cases and 40% of hepatitis B and C among healthcare professionals globally[8]. Around 34 million people are HIV-positive worldwide, according to Joint United Nations Program on Acquired Immune Deficiency Syndrome (AIDS). According to estimates, 0.8% of adults between the ages of 15 and 49 have HIV, and the bulk of them reside in Asia and Africa[9]. Because nurses have the greatest interaction with patients and are familiar with their knowledge, attitudes, and practice patterns, infection prevention is a top priority for all nurses and healthcare professionals. In healthcare settings, nurses regardless of their specialty have the closest contact with patients. Additionally, there are specific instances where nurses have been linked to the spread of nosocomial diseases that have been described in the literature. Additionally, there is some data that points to a possible connection between the spread of nosocomial diseases and the knowledge, attitudes, and behaviors of healthcare professionals[10-11]. Health care providers should adhere to certain rules when providing care to patients, according to documentation from Joint Commission on Accreditation of Health Care Organizations (JACO) and Centers for Disease Control and Prevention (CDC). These rules include hands wash through and after removing gloves and before and after client contact, wearing gloves

when is direct blood contact, not breaking or recapping needles, disposing of contaminated materials, and washing hands thoroughly after removing gloves[12]. The objective of study was to assess the knowledge and attitude of nurses about infection preventive measures at Imam Al-sadiq hospital in Babil City, and to describe relationship between socio-demographic characteristics and nurses level of knowledge and attitude.

SUBJECTS AND METHODS
Study Design
A cross-sectional descriptive study design has been carried out at Imam Al-Sadiq hospital in Babil City. Study subjects include 320 nurses selected from Imam Al-Sadiq hospital, to assess their knowledge and attitude about infection preventive measures. Sampling technique of nurses selection was non-probability (convenience sample). Convenience sampling known as haphazard sampling or accidental sampling which is form of nonprobability or nonrandom sampling in which members of target population who meet certain practical criteria, such as easy accessibility, geographical proximity, availability at given time, or the willingness to participate, are included for purpose of the study.[13] The sample size distributed according units at Imam Al-Sadiq hospital.

Unit name	No. of nurses
Burns unit	80
Pediatric	55
Radiology	37
Maternity	35
Emergency	33
Men ward	27
Out-patient unit	20
Blood bank	13
Cardiac care unit	10
Tumor center	10

Data Collection Tool
Data collection was through the direct interview technique with each participant of nursing staff lasted from March 2022 to July 2022. The study instrument was used questionnaire.

Research Instrument
Questionnaire format contents part(1)socio-demographic information, this part includes age (in years), gender, marital status, educational level, experience years, did you catch communicable disease and attending infection prevention seminars, part (2) knowledge of nurses, the questions in the Knowledge nurses consist of 16 items, answered for all items were know, not sure and don't know, distributed with 1, 2 and 3 scoring scale. part (3) attitude of nurses, the questions consist of 12 items, answered for all items were always , sometime and never, distributed with 1, 2 and 3 scoring scale.

Validity
Content validity for questionnaire has been determined through expert's panel. A draft of the questionnaire reviewed and evaluated in regard to contents, clarity relevancy and adequacy to achieve the present study objectives. All of the expert's comments have been taken in consideration for modification and revision.

Reliability
Pilot study, was done at the Imam Al-Sadiq hospital from each assigned unit, the instrument was created by the researcher in collaboration with experts in infection prevention techniques and the nursing profession. Both observation checklist and time needed to complete questionnaire were confirmed and observed.

Ethical Considerations
Ethical approval has been obtained from the research ethics committee in the Technical Institute-Suwaira, Middle Technical University, also approval obtained from Imam Al-Sadiq hospital /Babil Health Directorate. Participants in the study who are nurse's staff have completed consent forms acknowledging their understanding that their participation is voluntary and that the information will be dealt with in confidence and used exclusively for research purposes.

Data Analysis
The data analysis utilized the statistical package of social sciences (SPSS) version 25. The collected data was entered, coded, and examined: Frequency, percent and Chi-square has been calculated a P-value of less than or equal to 0.05 was considered statistically significant.

RESULTS

Results of (table 1) revealed that (320) nurses from socio-demographic characteristics; 57.2% of nurses were (20-29) years old, 57.5% of them were male, 70.3% were married, 55.3% were diploma of educational level, 54.4% of them were (1-5) experience years, 66.9% of them answer yes catch a communicable disease, and 68.7% answer yes participated in seminars about infection prevention measures.

Table 1: Distribution of Studied nurses according to their socio-demographic characteristics

Age	F	%	Gender	F	%
20-29	183	57.2%	Male	184	57.5%
30-39	126	39.4%	Female	136	42.5%
40- 49	8	2.5%	Total	320	100%
≥50	3	0.9%	Educational level	F	%
Total	320	100%	Preparatory	36	11.3%
Marital status	F	%	Diploma	177	55.3%
Single	84	26.3%	Bachelor	106	33.1%
Married	225	70.3%	MSc, PhD	1	0.3%
Divorced	7	2.2%	Total	320	100%
Widowed	4	1.3%	Did you catch communicable disease	F	%
Total	320	100%	Yes	106	33.1%
Experience years	F	%	No	214	66.9%
1-5	174	54.4%	Total	320	100%
6-10	101	31.6%	Attending infection prevention seminars	F	%
11-15	35	10.9%	Yes	220	68.7%
16 and more	10	3.1%	No	100	31.3%
Total	320	100%	Total	320	100%

F = Frequency, % = Percentage.

Figure 1 shows the work place of nurses in hospital, highly percentage of nurses found at burns unit 25%, while pediatric unit 17% and Radiology 12%. The low percentage 3% of nurses was at tumor center and C.C.U.
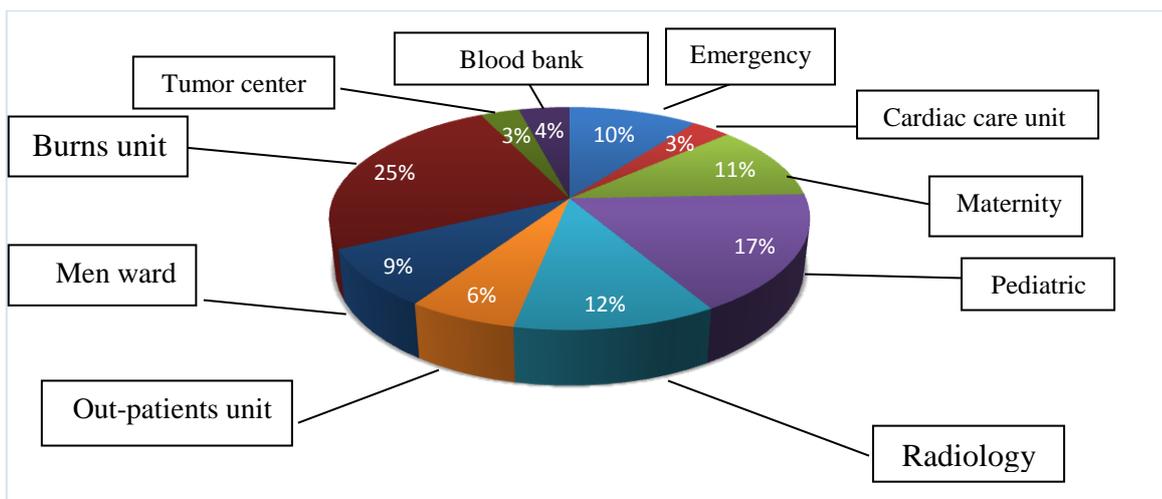

Figure 1: Work place of participated nurses in hospital

Table 2 reveals that most of the items related to knowledge of nurses about infection prevention measures their answers were know.

Table 2: Knowledge of nurses about infection prevention measures

No.	Items	Know		Not sure		Don't know	
		F	%	F	%	F	%
1	Know precautions of needle syringe and waste disposal.	240	75%	63	19.7%	17	5.3%
2	Know the guidelines for hand hygiene	177	55.3%	128	40%	15	4.7%
3	Is there an infection control team	191	59.7%	108	33.8%	21	6.6%
4	Received training in hand hygiene and standard precautions	172	53.8%	109	34.1%	39	12.2%
5	System for reporting exposure to body fluids and blood	182	56.9%	76	23.8%	62	19.4%
6	Know the impact of healthcare-associated infections on clinical outcomes	171	53.4%	115	35.9%	34	10.6%
7	Effective hand washing is in preventing healthcare-associated infections	204	63.7%	83	25.9%	33	10.3%
8	Know when to do hand washing	197	61.6%	92	28.7%	31	9.7%
9	Medical equipment can transmit nosocomial infections	153	47.8%	139	43.4%	28	8.8%
10	Blood and body fluids can spread nosocomial infections	149	46.6%	134	41.9%	37	11.6%
11	Know when to utilize common safety measures	187	58.4%	107	33.4%	26	8.1%
12	Think gloves are an effective alternative to hand washing	168	52.5%	121	37.8%	31	9.7%
13	Know the goal of the standard precautions	194	60.6%	92	28.7%	34	10.6%
14	Know what is the mechanism of the spread of bacteria and viruses	174	54.4%	118	36.9%	28	8.8%
15	Know what to do around TB patients to stop the disease's spread	210	65.6%	92	28.7%	18	5.6%
16	Know how to treat patients with communicable diseases to prevent transmission.	187	58.4%	105	32.8%	28	8.8%

F = Frequency, % = Percentage.

Table 3 presents that half of items related to attitude of nurses about infection prevention measures their answers were always

Table 3: Attitude of nurses about infection prevention measures

No.	Items	Always		Some time		Never	
		F	%	F	%	F	%
1	Feel comfortable asking each patient about infection symptoms	194	60.6%	117	36.6%	9	2.8%
2	Advise each patient to accept voluntary counseling and testing	116	36.3%	185	57.8%	19	5.9%
3	Feel comfortable telling cough patients to follow cough hygiene procedures	180	56.3%	97	30.3%	43	13.4%
4	Ventilate the suite by opening windows and doors	152	47.5%	139	43.4%	29	9.1%
5	Use of personal protective equipment	195	60.9%	93	29.1%	32	10%
6	Wash hands before and after touching sick people	173	54.1%	106	33.1%	41	12.8%
7	Think personal protection equipment protects health care personnel against infection	112	35%	170	53.1%	38	11.9%
8	Agree the hospitals can be infected without universal measures	125	39.1%	152	47.5%	43	13.4%
9	Think the needles should be reapplied after use	101	31.6%	117	36.6%	102	31.9%
10	Think that nosocomial infections can lead to dangerous outcomes	113	35.3%	160	50%	47	14.7%
11	Agree that re-coating is the cause of the needle prick injury	132	41.3%	150	46.9%	38	11.9%
12	Think segregating active TB patients from others is effective treatment	138	43.1%	130	40.6%	52	16.3%

F = Frequency, % = Percentage.

Table 4 indicate found statistical significant association between the items related to the knowledge of nurse's age, gender, educational level, experience years, catch communicable disease, attending infection prevention seminars.

Table 4: Association between Socio- demographic characteristics and Knowledge of nurses about infection prevention measures

| Items | Socio-Demographic characteristics | | | | | | | | | | | | | |
| | Age | | Gender | | Marital status | | Educational level | | Experience years | | Did you catch communicable disease | | attending infection prevention seminars | |
	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.
Know precautions of needle syringe and waste disposal.	0.17	Non	0.003	HS	0.25	Non	0.57	Non	0.008	HS	0.03	S	0.01	HS
Know the guidelines for hand hygiene	0.01	HS	0.04	S	0.31	Non	0.001	HS	0.000	HS	0.000	HS	0.27	Non
Is there an infection control team	0.65	Non	0.06	Non	0.79	Non	0.11	Non	0.37	Non	0.14	Non	0.12	Non
Received training in hand hygiene and standard precautions	0.001	HS	0.03	HS	0.12	Non	0.29	Non	0.000	HS	0.000	HS	0.85	Non
System for reporting exposure to body fluids and blood	0.79	Non	0.48	Non	0.51	Non	0.41	Non	0.11	Non	0.35	Non	0.05	S
Know the impact of healthcare-associated infections on clinical outcomes	0.09	Non	0.35	Non	0.11	Non	0.01	HS	0.000	HS	0.000	HS	0.54	Non
Effective hand washing is in preventing healthcare-associated infections	0.01	HS	0.14	Non	0.94	Non	0.24	Non	0.005	HS	0.000	HS	0.04	S
Know when to do hand washing	0.002	HS	0.000	HS	0.03	S	0.01	HS	0.000	HS	0.000	HS	0.94	Non

Item														
Medical equipment can transmit nosocomial infections	0.30	Non	0.01	HS	0.41	Non	0.38	Non	0.26	Non	0.180	Non	0.18	Non
Blood and body fluids can spread nosocomial infections	0.11	Non	0.35	Non	0.75	Non	0.16	Non	0.000	HS	0.006	HS	0.06	Non
Know when to utilize common safety measures	0.04	S	0.83	Non	0.21	Non	0.81	Non	0.27	Non	0.01	HS	0.68	Non
Think gloves are an effective alternative to hand washing	0.01	HS	0.55	Non	0.28	Non	0.05	S	0.000	HS	0.000	HS	0.21	Non
Know the goal of the standard precautions	0.000	HS	0.13	Non	0.23	Non	0.36	Non	0.007	HS	0.000	HS	0.16	Non
Know what is the mechanism of the spread of bacteria and viruses	0.07	Non	0.12	Non	0.39	Non	0.02	S	0.000	HS	0.000	HS	0.97	Non
Know what to do around TB patients to stop the disease's spread	0.20	Non	0.80	Non	0.34	Non	0.76	Non	0.01	HS	0.006	HS	0.88	Non
Know how to treat patients with communicable diseases to prevent transmission.	0.03	S	0.09	Non	0.31	Non	0.07	Non	0.000	HS	0.000	HS	0.54	Non

Sig.= Significance, X^2= Chi-square value

Table 5 presents statistical significant association between the items related to the attitude of nurse's age, gender, educational level, experience years, catch communicable disease, attending infection prevention seminars.

Table 5: Association between Socio- demographic characteristics and attitude of nurses about infection prevention measures

Socio-Demographic characteristics

Items	Age		Gender		Marital status		Educational level		Experience years		Did you catch communicable disease		attending infection prevention seminars	
	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.	X^2	Sig.
Feel comfortable asking each patient about infection symptoms	0.01	HS	0.01	HS	0.08	Non	0.28	Non	0.004	HS	0.001	HS	0.30	Non
Advise each patient to accept voluntary counseling and testing	0.28	Non	0.000	HS	0.43	Non	0.14	Non	0.86	Non	0.37	Non	0.38	Non
Feel comfortable telling cough patients to follow cough hygiene procedures	0.25	Non	0.04	S	0.16	Non	0.90	Non	0,12	Non	0.64	Non	0.03	S
Ventilate the suite by opening windows and doors	0.70	Non	0.38	Non	0.05	S	0.55	Non	0.43	Non	0.006	HS	0.18	Non
Use of personal protective equipment	0.76	Non	0.82	Non	0.33	Non	0.12	Non	0.94	Non	0.13	Non	0.12	Non
Wash hands before and after touching sick people	0.35	Non	0.05	S	0.17	Non	0.01	HS	0.04	S	0.000	HS	0.33	Non
Think personal protection equipment protects health care personnel against infection	0.04	S	0.29	Non	0.90	Non	0.54	Non	0.14	Non	0.23	Non	0.002	HS
Agree the hospitals can be infected without universal measures	0.89	Non	0.52	Non	0.06	Non	0.50	Non	0.16	Non	0.01	HS	0.004	HS
Think the needles should be reapplied after use	0.72	Non	0.69	Non	0.59	Non	0.01	HS	0.34	Non	0.000	HS	0.11	Non
Think that nosocomial infections can lead to dangerous outcomes	0.12	Non	0.61	Non	0.49	Non	0.03	S	0.93	Non	0.05	S	0.21	Non
Agree that re-coating is the cause of the needle prick injury	0.19	Non	0.96	Non	0.07	Non	0.21	Non	0.13	Non	0.35	Non	0.16	Non

| Think segregating active TB patients from others is effective treatment | 0.11 | Non | 0.03 | S | 0.14 | Non | 0.87 | Non | 0.38 | Non | 0.01 | HS | 0.05 | S |

Sig.= Significance, X^2= Chi-square value

DISCUSSION

According to knowledge of nurses about infection prevention measures most of their answer were know. This results reflect the strong knowledge about infection prevention methods, which comes from having participated in courses and seminars about how to deal with infection and how to prevent infection in the first place. These findings are consistent with research' findings [1] , result of study revealed that the mostly of the sample had a strong understanding of infection control methods, but they did not consistently wash their hands or wear gloves, which are the two most important steps in preventing the spread of infection.

The current study indicate that half of the items related to attitude of nurses about infection prevention measures most of their answer were always. This results reflect the nurses have a good attitude about infection protection measures, particularly in light of the recent scares caused by pandemic diseases like as Covid-2019 and malaria. The study [14], most nurses had good knowledge (n = 10, 40%-90%) and favorable attitude (n = 4, 37%-100%), most studies showed mediocre or poor nursing practices regarding infection management and prevention, periodic training through scientific conferences and relevant practical courses (n = 12), combining up-to-date theoretical and practical programs (n = 6), and training at the beginning of hospital employment (n = 4) were most common recommendations for improving nurses' knowledge, attitude and practice .

Results of present study show that highly statistical significant association between items related to the knowledge of nurses age, gender, educational level, experience years catch communicable disease. These results reflect the nurses put their attention on preventative measures and making sure they aren't exposed to any infectious infections, particularly after Covid-19, as well as techniques that are used in hospitals to promote healthy lifestyles and reduce the risk of disease. Findings of [15], support these, most study participants were knowledgeable, scoring 78.3% on average. 92.55%, 90.3%, and 91.7% of participants knew about infection control measures, COVID-19 waste management methods, and infection control supplies. HWs' waste management and infection control knowledge linked with sex (P .001 and.001), education (P =.024 and.043), and working experience (P =.029 and.009) .

Furthermore, the results present highly statistical significant association between items related to the attitude of nurses age, gender, educational level, experience years catch communicable disease, attending infection prevention seminars. These results reflect according to the many courses that the nurses take to learn the importance of infection prevention measures to enhance immunity and prevent infection diseases between patients, the nurses have a positive attitude toward the precautions that are taken to avoid the spread of infection. The study[16], in the current study, knowledge, attitude, and practice scores were linearly correlated (r = 0.161, p 0.05). Infection prevention and control attitudes and practices did not correlate. The study findings are not compatible with earlier studies that found a considerable association between knowledge, attitude, and practice for standard and isolation precautions .

CONCLUSIONS

This study concluded that the knowledge of nurses were good and their attitude were not good, as well as present highly statistical significant association between items related to the knowledge and attitude of nurses with their socio-demographic characteristics.

Conflict of Interest
No any conflict of interest

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