Original Study

Nurses' Compliance with Standard Precautions Regarding Infection Control at Eldaein Teaching Hospital, East Darfur state 2021

Mahassin A. B. Fadil All[1], Mohammed K. H. Khalid[2*] , Mohamed A. A. Alamein[3]

[1]Assistance Professor Nursing College and Health Sciences Technology - Karay University- Sudan, [2*]Assistance Professor. Nursing College - Jazan University- KSA , [3*]MSc candidate -. karary university – Sudan.

How to cite this article: All MABF, Khalid MKH , Mohamed Abd Alhadi Hiader Alamein MAAH. Nurses' Compliance with Standard Precautions Regarding Infection Control at Eldaein Teaching Hospital, East Darfur state 2021. 2023;15(2): 29-34.

ABSTRACT

Introduction: Staff nurses play an important role in prevention of infection of patients by paying careful attention to hand hygiene, ensuring careful administration of prescribed antibiotics and by following procedures to reduce the risks associated with patient care devices.

Aim: To evaluate compliance of nurses regarding standard precautions of infection control.**Method:** Descriptive cross-sectional hospital-based study was conducted at ELdaein teaching hospital. The sample consisted of 60 nurses. Data was collected though observational checklist.

Result: nurses' compliance with standard precautions of infection control was good Mean **±** SD **(2.92, 0.512).**

Conclusion: The nurses had a good level of compliance with standard precautions of infection control while most of nurseswere not compliance with washinghands before wears gloves, wear masks and protective eye patch or goggle when performing operations/procedures that might induce spraying of blood, body fluid, secretions, and excretions due to lack of personal protective equipment. The findings suggest the important of continuous teaching, training, and workshop courses to improve nurses' compliance with standard precautions of infection control and to supply all personal protective equipment which helps the nurses to comply with standard preparations of infection control.

Keywords: nurses' compliance, standard precautions, infection control, Nurses 'adherence, personal protective equipment.

INTRODUCTION

Infection controlis a scientific approach and practical solution designed to prevent harm caused by infection to patient and health worker [(1)] .Standard precautions (SPs) are intended for use to prevent the transmission of infection from one source to another. SPs are intended to protect healthcare providers, patients, and supporting staffs from nosocomial infections and occupational hazards. Healthcare associated infections (HAIs) are the main cause of morbidity and mortality associated with clinical, diagnostic and therapeutic procedures. HAIs are not only a threat for healthcare workers (HCWs) but also a threat for service users and patients. HAIs are infections that spread from one individual to others through a variety of ways. The most important spreading mechanism of these pathogens is via contaminated hands of the healthcare provider to the other healthcare provider, to patients or attendants of the

Corresponding Author: Mohammed Khalid Hussein Khalid, Assistant Professor, Faculty of Nursing Sciences, Jazan University, Jazan, KSA

Email: abo.khalid200@hotmail.com

patients. The most important circumstances that a healthcare provider to be a risky group in any healthcare setting for HAIs are during direct patient care, instrument processing, surgical procedures, healthcare waste disposal, and processing patient care items[2] .

Healthcare-associated infections, or "nosocomial" and "hospital" infections, affect patients in a hospital or other health-care facility, and are not present or incubating at the time of admission. They also include infections acquired by patients in the hospital or facility but appearing after discharge, and occupational infections among staff [3].

The Center for Disease Control (CDC) estimates that approximately one-third of all nosocomial infections could be prevented with an effective infection control program [4]. The CDC in 1996 introduced a revised version of a preventive concept against nosocomial infections that originated in the 1960s. It advocates basic standard precautions for all healthcare delivery and additional specific measures to protect healthcare workers and patients from exposure to potentially harmful microorganisms [3]. Routine practices essential to infection control such as aseptic techniques, use of single-use devices, reprocessing of instruments and equipment, antibiotic usage, management of blood/body fluid exposure, handling and use of blood and blood products, management of medical waste [5]. Compliance with the rules, largely set by applicable legislation, can help prevent the spread of hospital infections, protect patients, shorten the length of treatment, and thus reduce healthcare costs associated with inpatient and outpatient medical facilities and sanatoriums [2]. Infection control practices can be grouped into two categories standard precautions and additional (transmission-based) precautions [6].

Standard precautions must be applied to all patients at all times, regardless of diagnosis or infectious status, and additional (transmission-based) precautions that are specific to modes of transmission (airborne, droplet, and contact)[6]. It aims to prevent transmission of infections from patient to health care worker, health care worker to patient, patient to patient (cross-transmission), hospital environment to patient, and hospital waste to community spread. The standard precautions of infection control are hand hygiene, correct use of personal protective equipment, control of the environment [6]. The infectious agent is the types of microorganisms that cause infections, eg bacteria, viruses, protozoa, fungi, and helminthes[4]. Transmission-based precautions are a set of guidelines proposed for hospitalized patients who are known (or suspected) to be infected or colonized with highly transmissible or epidemiologically important pathogens. As these patients carry a high risk of transmitting the pathogen to the healthcare worker and adjacent patients, further measures are needed in addition to standard precautions to prevent transmission of infection. Usually, these patients must be isolated and the appropriate transmission-based precaution must be used [7].

MATERIAL AND METHODS

Descriptive cross-sectional hospital base study design. Conducted in Eldaein teaching hospital at East Darfur state -Sudan. Total coverage for 60 nurses. Data was collected though observational checklist

Sample

Nurses (n 60) working in words at Eldaein teaching hospital (medical-surgical, obstetrics-gynaecology word, and paediatric word) and met inclusion criteria.

Data collection technique

A direct observation was carried out by researchers by using observation checklist regarding nurse's compliance with standard precautions of infection control.

Statistical analysis

Data were collected, computerized, and statistically analyzed using the statistical package for the social sciences program (SPSS) version 24. Data analyzed including both

descriptive and inferential statistics. Data were presented using descriptive statistics in the form of frequencies, percentages, mean and standard deviation for the variable. The 0.05 level was used for statistical significance (P values ≤ 0.05).

Ethical consideration

Ethical approval was obtained from the Review Committee of Karary University, Ministry of health in east Darfur and manager of Eldaein teaching hospital, and verbal consent from all participants.

The purposes of the study explained to the participants in a simple ward.

The privacy of participants was protected.

Participants participated involuntarily.

RESULT

Table (1) show distribution of nurses according to demographic and occupational characteristics of nurses

In relation to nurses' compliance with standard precautions of infection control as illustrated in **Tables (2),** demonstrate that overall all compliance of nurses was good Mean± SD (**2.92, 0.512)**

Table 1: Demographic and occupational characteristics of nurses (n=60)

Characteristics	Response	N	percent
Sex	Male	10	16.7%
	Female	50	83.3%
Age (years)	Less than 25	3	5.0%
	(26- 30)	11	18.3%
	(31-40)	15	25.0%
	More than 40	31	51.7%
Scientific qualification	Secondary school nursing	45	75%
	Diploma	7	11.7%
	Bachelor	7	11.7%
	Master	1	1.7%
Experience (years)	Less than 2	4	6.7%
	(2-5)	23	38.3%
	(6-10)	31	51.7%
	More than 10 years	2	3.3%
Attending training program or workshop about infection control	Yes	34	56.7%
	No	26	43.3%

Table 2: Nurses' compliance with standard precautions of infection control (n=60)

S. No	Compliance Activity	Always	Usually	Sometime	Seldom	Never	Mean	SD
		N (%)	N (%)	N (%)	N (%)	N (%)		
1	Washes hands when comes in contact with different patients.	2(5%)	3(3.3%)	2 (5%)	9 (15%)	43(71.7)	1.48	0.245
2	Washes hands before wears gloves	2(5%)	5(8.3%)	3(3.3%)	12(20%)	38(63.3%)	1.68	0.197
3	Washes hands after taking off the gloves	6 (10%)	4(6.7%)	10 (16.7%)	21(35%)	19(31.7%)	2.28	0.172
4	Washes hands immediately after contacting any blood, body fluid, secretion, excretion and dirty substances.	13(21.7%)	35(58.3%)	7 (11.7%)	2(3.3%)	3(5%)	3.88	0.965
5	Wears gloves when drawing blood samples.	9 (15%)	11(18.3%)	32(53.3%)	7(11.7%)	1(1.7%)	3.33	0.610
6	Wears gloves when disposing stool and urine.	20(33.3%)	26(43.3%)	12(20%)	1(1.7%)	1(1.7%)	4.05	0.846
7	Wears gloves when handling impaired patient skin.	6(10%)	8(13.3%)	16(26.7%)	18(30%)	12(20%)	2.63	0.216
8	Wears gloves when handling patients' mucosa.	11(18.3%)	31(51.7%)	7 (11.7%)	7 (11.7%)	4(6.7%)	3.63	0.814
9	Wears gloves when given medications.	10 (16.7%)	8(13.3%)	26(43.3%)	14(23.3%)	2(3.3)	3.17	0.469
10	Wears gloves when dressing wounds.	30(50%)	21(35%)	4(6.7%)	4(6.7%)	1(1.7%)	4.25	1.078
11	Wears gloves when cleaning blood trace.	15(25%)	13(21.7%)	11(18.3%)	13(21.7%)	8(13.3%)	3.23	0.427
12	Wears gloves when comes in contact with blood.	6(10%)	10 (16.7%)	11(18.3%)	21(35%)	12(20%)	2.62	0.198
13	Uses aseptic technique when handing invasive device	9 (15%)	19(31.7%)	23(38.3%)	7 (11.7%)	2(3.3)	3.43	0.544
14	Wears mask when performing operations/procedures that might induce spraying of blood, body fluid, secretions and excretions	7 (11.7%)	5(8.3%)	15(25%)	13(21.7%)	20(33.3%)	2.43	0.179

S. No	Compliance Activity	Always	Usually	Sometime	Seldom	Never	Mean	SD
		N (%)	N (%)	N (%)	N (%)	N (%)		
15	Wears protective eye patch or goggle when performing operations/procedures that might induce spraying of blood, body fluid, secretions and excretions.	1(1.7%)	3(5%)	2(3.3)	12(20%)	42(70%)	1.48	0.258
16	Wears protective suit or gown when performing operations/procedures that might induce spraying of blood, body fluid, secretions and excretions.	4(6.7%)	5(8.3%)	13(21.7%)	8(13.3%)	3(5%)	1.63	0.214
17	Do not recap syringe after using.	16(26.7%)	13(21.7%)	11(18.3%)	10 (16.7%)	10 (16.7%)	3.25	0.463
18	Discard needles and blades in a sharp safety box after using.	38(63.3%)	7 (11.7%)	4(6.7%)	3(5%)	8(13.3%)	4.07	1.323
	Overall compliance	58.5%					2.92	0.512

Overall Scale: mean (1-1.80) = poor, (1.81-2.60) = fair, (2.61- 3.40) = good, (3.41-4.20) =Very good, (4.21-5) = excellent.

There was insignificant association between nurses' compliance with standard precautions of infection control and scientific qualification, experience period and receiving training courses, P values significant at ≤ 0.05 as shown in **table (3)**

Table 3: Association between nurses' compliance with standard precautions of infection control and Scientific qualification,Experience period and receiving training courses(n=60)

Variables	Person correlation test		
	Nurses' compliance with standard precautions of infection control		
	N	R	p-value
scientific qualification	60	0.215	0.099
Experience period	60	0.043	0.744
receiving training courses	60	0.011	0.931

P values significant at ≤ 0.05

DISCUSSION

Compliance with standard precaution is essential for prevention of hospital associated infection.

In the current study, nurses' compliance with standard precautions of infection control was good Mean **±** SD (**2.92, 0.512)**

This result constant with the study done by Al-Rawajfah et al[8], in Jordanian about compliance of Jordanian registered nurses with infection control guidelines.

An insignificant correlation between nurses' compliance with standard precautions of infection control and their scientific qualification, experience period, and attending training programs or workshops about standard precautions o+f infection control(P-Value > 0.05); contrasting with the result of a study done by Peng Xiong et al[9] (2017) in teaching hospital in Hubei, china about effect of a mixed media education intervention

program on increasing knowledge, attitude and compliance with standard precautions among nurses.

CONCLUSION

Nurses' compliance with standard precautions of infection control was good. There was insignificant correlation between nurses' compliance with standard precautions of infection control and their scientific qualification, experience period, and attending training programs or workshops about standard precautions of infection control. It is recommended for continuous teaching, training, and workshop courses to improve nurses' compliance with standard precautions of infection control and to supply all personal protective equipment which helps the nurses to comply with standard preparations of infection control.

Source of funding:

This manuscript is Self-Funded

Conflict of Interest:

Conflict of Interest Nil(No)

REFERENCES

1. World health organization, Infection prevention and control, 2019, Switzerland, p.1. www.who.int/infection-prevention/about/ipc/en/ (Accessed 2020-1-16)

2 . Kasa .A. et al , Knowledge towards standard precautions among healthcare providers of hospitals in Amhara region, Ethiopia, 2017. Archives of Public Health (2020) 78:127

3. L, Leodoro. "Knowledge and Compliance with Standard Precaution among student nurse". Sultan Qaboos University, International Journal of Advanced Nursing Studies, I (2) (2012)84-97.

4. Sandra M, et al, Brunner and Suddarth's textbook of medical-surgical Nursing. 10th Edith, Lippincott Williams, and Wilking, Philadelphia,2011, p 2119

5. World Health Organization, 2016. Guidelines on the core component of infection prevention and control programs at the national and acute health care facility level, http://apps.who.int/iris. (Accessed 2020-1-28).

6. Shone, R and furrows, S. Rapid Infection Control Nursing. 1st Ed. West sussex, wiley Blackwell, 2014.E-book, p (20-33).

7. Candace, F. William, N, Basic Concepts of Infection Control. 2nd Ed, Bonavia - Malta, 2011.p123-136.

8. Al-Rawajafah OM, Hweidi IM, Alkhalaileh M, et al. Compliance of Jordanian registered nurses with infection control guidelines: a national population-based study. J Infect Control. 2013 Nov; 41 (11); 1065-8.

9. Xiong P, Whang J, Wang X, Hall BJ. Effect of a mixed media education intervention program on increasing knowledge, attitude, and compliance with standard precautions among nursing: Randomized controlled trial. Am J Infect control. doi: 10.1016/j.ajic.2016.11.006.Epub 2016 Dec13.