Kufa Journal for Nursing Sciences
Open Access Full Text Article

University of Kufa, Faculty of Nursing
Original Research

Evaluation of Nurses' Practices toward Some Sterilization Techniques at Emergency Department in Al-Diwaniya Teaching Hospital

Wissam M. Kareem [1]

Dr. Sabah Abbas Ahmed [2]

* Adult Nursing Department, College of Nursing, University of Baghdad, Ministry of health, Iraq.

** Adult Nursing Department, College of Nursing, University of Baghdad, Iraq.

Corresponding author:
Wissam Mohammed Kareem; Adult Nursing Department, College of Nursing, University of Baghdad, Ministry of health, Iraq.
E-mail:
Wessam.Mohammed1202a@conursing.uobaghdad.edu.iq.

الخلاصة:

خلفية البحث: تقنيات التعقيم هي أنواع من الكفاءات السريرية العديدة الفعالة وذات الصلة بالرعاية الصحية. إنها مجموعة من الطرق المستخدمة لمنع التلوث بالكائنات الحية الدقيقة ويتم تطبيقها بعناية في ظل ظروف خاصة لتقليل العدوى. غالبًا ما تكون مصطلحات تقنية التعقيم غير ثابتة، وتستخدم بشكل متبادل ومضلل وبدون حقائق ، ويبدو أن كل ذلك ساهم في تباين في التطبيق، وإدارة المخاطر غير الكافية والمعايير الواقعية غير المنظمة. يتطلب سلسلة من الخطوات لردع العدوى المصممة لحماية المرضى من الأمراض المتعلقة بانتشار الكائنات الحية الدقيقة المسببة للأمراض. من أهم أدوار الممرضين هو مكافحة العدوى والوقاية منها. من بين التدابير المهمة التي قد تقلل العدوى أو مضاعفات العدوى تثقيف المريض، واستخدام معدات الحماية الشخصية ونظافة اليدين وغيرها من المعدات. يتحمل جميع الممرضين في المستشفيات مسؤولية سلامة المرضى والحفاظ على نظافة المستشفيات وتعقيمها من العدوى.

الهدف: تقويم ممارسات الممرضين باتجاه بعض تقنيات التعقيم في قسم الطوارئ في مستشفى الديوانية التعليمي.

المنهجية: تم تنفيذ التصميم الكمي (دراسة وصفية) في قسم الطوارئ في مستشفى الديوانية التعليمي للفترة من (17 / ايلول / 2020 إلى 16 / آذار/ 2021) على عينة غير احتمالية (هادفة). تتكون من (30 ممرض\ة) تعمل بقسم الطوارئ.

النتائج: أشارت إلى أن ممارسات الممرضين في المجالات المعقمة في الاختبار القبلي كانت عادلة بمتوسط الدرجة (1.53).

الاستنتاجات: استنتج الباحث أن ممارسات الممرضين كانت ضعيفة تجاه تقنيات التعقيم في قسم الطوارئ.

التوصيات: أوصت الدراسة بإمكانية مشاركة جميع ممرضي الطوارئ في برنامج تعليمي خاص وتشجيعهم على تعزيز المعرفة والممارسات المتعلقة بتقنيات التعقيم وتوفير المستلزمات الطبية مثل: (القفازات والكمامات والبدلة الوقائية) لمكافحة العدوى في قسم الطوارئ.

الكلمات المفتاحية: ممارسات الممرضين، تقنيات التعقيم.

ABSTRACT

Background: Sterilization techniques are types of healthcare's many effective and relevant clinical competencies. It is a group of methods used to prevent contamination with microorganisms and, carefully applied under special conditions to reduce infection. The sterilization technique's terminology is frequently inconsistent, used inter changeably, misleading and without facts, all of which seems to have contributed to variability in application, insufficient risk management and unregulated realistic standards. It requires a series of steps to deter infection designed at shielding patients from diseases related to the spread of pathogenic microorganisms. One of the most important roles of nurses is infection control and prevention. Among the important measures that may reduce infection or complications of infection are patient education, use of personal protective equipment and hand hygiene and other invasive equipment. In hospitals, all nurses are

responsible for the safety of patients and keeping hospitals clean and sterile from infection, although there are some nurses called infection control nurses.

Objective: to evaluating of nurses' practices toward Some Sterilization Techniques at the Emergency Department.

Methodology: Quantitative design (a descriptive study) was carried out at Emergency Department in Al-Diwaniya Teaching Hospital for the period from (17th September, 2020 to 16th March, 2021) on a non-probability (purposive) sample consisting of (30 nurses) working in Emergency Department.

Results: The results of this study indicated that nurses' practices for sterile domains in the pre-test was fair at mean score (1.53). The researcher concluded that the nurses' practices had poor toward sterilization techniques at Emergency Department.

Conclusion: The researcher concluded that the nurses' practices were not at the level required (poor) to fit with the critical and special nature of Emergency Department.

Recommendation: The study recommended that can participating all emergency nurses in special educational program and encouraging to enhance knowledge and practices related to sterilization techniques and provide medical supplies such as: (gloves, mask, and gowns) to infection control in the Emergency Department.

Keyword: Nurses' practices, Sterilization techniques.

INTRODUCTION

Sterilization techniques are a series of guidelines intended to avoid or reduce the exposure of hospital personnel, patients and their guests to infectious agents, is the most effective and easiest way to prevent infection in the hospital. Normal precautions assume that both patients' blood and body fluids are possible vectors of contamination, independent of diagnosis or alleged contagious status. HCW shows variable awareness, behavior and implementation of standard precautions based on their professional community and length of professional experience, along with much other sterilization, as that have indicated by many studies. Application of standard precautions by health care providers has increased with longer career practice, common precautionary awareness and preparation, and highly risky identification [(1)].

In order to save HCWs, these steps are prepared and forbid the prevalence of infections among patients. The components of standard precautions includes "hands hygiene; use PPE (e.g., gloves, gowns, face masks); breathing hygiene and cough etiquette; safe injection practices; medical waste management; and cleanings, .disinfection, and sterilization of devices and tools". Infection prevention measures suggest the lower protective measures that, in every case of suspected or actual situations of disease, categories each client at any location that health care has been given [(2)].

Nosocomial infection, also referred to as hospital-acquired infection, is caused by viruses, fungi, parasites, and bacteria present on medical equipment and instruments used in the care of patients, or in the air or surfaces, etc. This infection affects particular parts of the body, or is systemic, and its effects occur 48 hours after exposure, and are therefore especially severe for patients with autoimmune disease and for the aging. One of the most important problems caused by hospital infection is the length of staying in the hospital and financial problems, and it may lead to death, so it affects the health services provided to patients [(3)].

Health care centers are among the most common places for infection among health care providers and patients, as microorganisms cause infection and invade the body, and then their signs

and symptoms appear. The infection causes simple diseases that do not significantly affect the body and end within a short period, while others expose the body to a great risk that may reach death and often the infection is a disease that does not last long. Failure to properly eliminate pathogens by a health care professional and non-compliance lead to serious complications for the safety and health of patients [4].

The Emergency Department (ED) is the place where patients are first exposed to the hospital's special infectious environment, and this is because of being primary entrance for patients admitted to the hospital. As the ED has specific obstacles to patient safety, involving crowding, the urgency of treatment, staff shortages, and lengthy delays in moving patients to the ICU and other facilities, the introduction of infection control measures in the ED is likely to face particular challenges. In addition, improving hand hygiene and complying with proper requirements for the application of a urinary catheter may not be initiated in a hectic situation relative to the essential health care needs of the patient requiring emergency care. However, in western European EDs no published studies on infection prevention are available to date [5].

The emergency department nurses are working to limit the transmission of infection and prevent harmful risks by supplying patients with health and curative care. In addition to research undertaken to improve the practical procedures of nurses, adopting protective strategies and prevention steps such as hand washing and other precautionary steps properly contribute to infection management [6].

Scientific literature shows that a clear correlation between failure compliance by healthcare workers with sterilization techniques and the spread of pathogens. Poor compliance with the recommended recommendations for healthcare staff is to monitor the transmission of diseases, especially that happens during the execution of surgical operations and leads patients to increase infected by pathogens, when the health-care staff refuse to follow aseptic protocols. Averages of 8.7 percent of patients have hospital infections, according to a study by the world health organization in 55 hospitals in 14 countries. Globally, the risks posed by hospital infections affect nearly 1.4 million [7].

AIMS OF THE STUDY

To evaluating of nurses' practices toward Some Sterilization Techniques at the Emergency Department.

METHODOLOGY

Quantitative design (a descriptive study) has been carried out as a choice to specific phenomena of interest related to evaluate nurses' practices regarding sterilization techniques at Emergency Department in Al-Diwaniya Teaching Hospital. The period of the study started from (17th September, 2020) to (16th March, 2021). A non- probability (purposive) sample was selected to obtain representative and accurate data. The total number of nurses participating in the study were (30) nurses from the Emergency Department in Al-Diwaniya Teaching Hospital.

- **Study instrument:** The instrument for this study, including two parts, first consists of (6) paragraphs: age, gender, educational level, years of experience in nursing, years of experience in the Emergency Department, number of training courses on infection control and the date of the last course. The second part consists from 8 domains which include: hand washing, gloves, gown, mask, instruments and equipment, peripheral venous catheter (PVC), intravenous IV fluids and medication, and medical waste management.

The content validity of the instrument has been established by evaluation of the observational checklist a panel of (11) experts,

who had more than 10 years of professional experience in their fields, to visibility and competence the observational checklist about sterilization techniques.

- **Scoring:** The patterns used for rating and scoring of sterilization techniques domain items is Likert scales (Three points) which scored as (Always=3), (Sometimes=2), and (Never=1).
- **The Statistical Data Analysis:** To analyze the results of the study, descriptive and inferential statistics were used like the Statistical Package of Social Sciences (SPSS) and Microsoft Excel (2010).

RESULTS

Table (1): Study of Sample Demographic Data

Demographic data	Rating and intervals	Frequency	Percent
Age / Years	20-29	17	56.6
	30-39	6	20.0
	40-49	4	13.3
	50 and more	3	10.0
Gender	Male	19	63.3
	Female	11	36.6
Number Of Training Session About Infection Control	Yes	0	0.0
	No	30	100.0
Educational Level	Secondary Nursing School	6	20.0
	Diploma	8	26.6
	Bachelor	16	53.3
Years Of Experience In Nursing	1-5	16	53.3
	6-10	7	23.3
	11-15	4	13.3
	16-20	3	10.0
Years Of Experience In ED	1-5	20	66.6
	6-10	5	16.6
	11-15	3	10.0
	16-20	2	6.7

Table 1 displays the demographic data of the study sample. The study results show that the dominant age group of nursing staff is (56.6%) at age group (20-29) years old. According to gender the table show that (63.3%) of nurses is male. Concerning the educational level, the results of the study show that (53.3%) of nurses were graduated from college of nursing. Regarding years of experience, the table shows that (53.3%) of the nurses have (1-5) years of experience in nursing. In regards to years of experience in ED, the results show that the majority of nurses (66.6%) have (less than or equal 5) years of experience in ED. Additionally, all the study samples (100%) don't have training sessions about infection control measures.

Table (2): The overall Evaluation of the Nurses' Practices in some Sterilization Techniques

Main studied domains	Levels	Statistics	Percent
Hand Washing	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	29
		%	96.7%
	Poor Practices	Freq.	1
		%	3.3%
Gloves	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	20
		%	66.7%
	Poor Practices	Freq.	10
		%	33.3%
Gowns	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%
Mask	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%
Instruments and Equipment's	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%
Peripheral Venous Catheter	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	28
		%	93.3%
	Poor Practices	Freq.	2
		%	6.7%
Intravenous Infusion and Medication	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%
Medical Wast Management	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%
Overall Nurses' Practices	Good Practices	Freq.	0
		%	0.0%
	Fair Practices	Freq.	30
		%	100.0%

%= percentage; freq. = frequency.

Table (2) shows that the overall evaluation of the nurses' practices to main domains of sterilization techniques were fair practices in ratio (100%), except for domains (hand washing, gloves, and peripheral venous catheter) were the ratio (96.7%, 66.7%, 93.3%) respectively, and (3.3%, 33.3%, 6.7%) respectively, were poor practices.

Table (3): Summary Statistics of the Overall Nurses' Practices toward some Sterilization Techniques.

Main studied domains	Mean	Std. Deviation	Evaluation
Hand Washing	1.47	.185	Fair Practices
Gloves	1.33	.239	Poor Practices
Gowns	1.406	.036	Fair Practices
Mask	1.53	.126	Fair Practices
Instruments and Equipment's	1.66	.239	Fair Practices
Peripheral Venous Catheter	1.62	.169	Fair Practices
Intravenous Infusion and Medication	1.60	.203	Fair Practices
Medical Wast Management	1.64	.199	Fair Practices
Overall Nurses' Practices	1.534	.046346	Fair Practices

Mean, fair practices (mean 1.34-2.33), poor practices (mean 1-1.33). std. = standard deviation.

Table (3) shows that the overall nurses' practices are related to main domains of sterilization techniques. The study result indicates that the overall evaluation of nurses' practices to main domains of sterilization techniques were fair practices at mean score (1.53).

DISCUSSION

- **Part I: Discussion of the Nursing Staffs' Demographic Characteristics of the Study Sample, as Shown in Table (1):**

The results of this study showed that the majority of nurses' age percentage in this study between 20 to 29 years is (56.6%). These results are consistent with (Desta et al., 2018), which show in their study that the participants age ratio between 24 to 30 is (52%) [8].

According to the results of this study that indicates to more than half of the nursing staff are males in ratio 63.3% and 36.6% of females. These results agree with (Faris & Hassan, 2016), which found in their study that most of the sample's gender of males [9].

Regarding the level of education, the results of this study found that 53.3% of the participants graduated from the college of nursing and 26.6% have diploma degree. These findings supported by (Ghorbani et al., 2016), which found that most participants were graduated from the college of nursing (60%) [10].

According to the number years of experience in nursing field, the results of this study found that most nurses have 1 to 5 years of experience in ratio (53.3%). These finding agree with (Eskander et al., 2013) [11], which indicates that percentage of the nursing staff (55.6 %) that had years of experience from (1 - 5). While found the results of this study that 66.6% of nurses had from 1 to 5 years of experience in Emergency Department. This results agree with those by (Kilic et al., 2016), that found the majority of nurses had 1 to 5 years of experience in Emergency Department [12].

The study findings according to the training sessions about practices of control infection shows that all samples in this study have no training courses about infection control measures. These results supported with those by (Attia et al., 2016), which

indicates that all nurses did not participate in training courses in this field [13].

- **Part II: Discussion of the Overall Evaluation of Nurses' Practices Regarding Sterilization Techniques, as Show in Tables (2and 3):**

The study findings shows that the overall evaluation of the nurses' practices to main domains of sterilization techniques were fair practices in ratio (100%), except for domains (hand washing, gloves, and peripheral venous catheter) were the ratio (96.7%, 66.7%, 93.3%) respectively, and (3.3%, 33.3%, 6.7%) respectively, were poor practices as show in table (2).

These results are agree with those by (Vinodhini, 2016), who evaluate infection control practices among health care workers in a specialty hospital, who found that more than half of the study sample were poor practices related to infection control measures [14].

The study results indicate that overall nurses' practices related to main domains of sterilization techniques. The study result show that overall evaluation of nurses' practices to main domains of sterilization techniques were fair practices at mean score (1.53) as show in table (3).

These findings are along with studies performed by (Abdulhassan & Ali, 2020), who hand hygiene practices and infection control measures among emergency units health care providers, which found that the practices of healthcare workers recorded poor levels related to infection control measures [15].

Nursing staffs at emergency department in AL-Diwaniyah Teaching Hospital had no available written protocols or resources of information to update their knowledge, and enhance their practices about appropriate application of sterilization techniques. And also, lack of personal protective equipment such as gloves, mask and others, in addition to the absence of continuous monitoring and evaluation necessary to maintain the correct practices: increasing the workload to receive patients infected with Coronavirus and other emergency cases, and on the other hand, the lack of nursing staff in the emergency department. However, that may explain the primary study results.

CONCLUSION

The researcher concluded that the nurses' practices were not at the level required (poor) to fit with the critical and special nature of Emergency Department. The nursing staff at the Emergency Department in Al - Diwaniyah Teaching Hospital had no available written protocols or resources of information update to improve their practices about sterilization techniques (Hand Washing, Personal protective equipment, Instrument and Equipment, Peripheral Venous Catheter, Intravenous Infusion and Medication, Medical Waste Management).

RECOMMENDATIONS

Activating the Training and Development Center to conduct educational courses related to infection control practices in the hospital, especially for Emergency Department nurses and developing the knowledge and practices of nurses in the Emergency Department by engaging them in training courses on infection control measures. Providing medical supplies for infection control practices to health care providers such as personal protective equipment and sterilization solutions such as alcohol…etc.

REFERENCES:

1. Porto, J. S., & Marziale, M. H. P. (2020). Construction and validation of an educational video for improving adherence of nursing professionals to standard precautions. Texto & Contexto-Enfermagem, 29, P.P: 1-4.
2. World Health Organization. (2019b). Infection Prevention and Control During Health Care for

Probable or Confirmed Cases of Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Infection Interim guidance. WHO/MERS/IPC/15.1 RV1, Updated 4 June 2015. P.P: 3. Retrieved from https://www.who.int/csr/disease/coronavirus_infections/ipc-mers-cov/en/.

3. Engda, T. (2020). The contribution of medical educational system of the College of Medicine, and Health Sciences of the University of Gondar in Ethiopia on the knowledge, attitudes, and practices of graduate students of Health Sciences in relation to the prevention and control of nosocomial infections during the academic year of 2018. BMC Medical Education, 20(1), P.P: 1-12.
4. Mohammed, B., Samya, E. S., & El-Dakhakhny, A. (2019). Effect of an Educational Training Program for Nurses about Infection Control Precautions in Their Practice in the Pediatric Critical Care. *Afro-Egyptian Journal of Infectious and Endemic Diseases*, 9(1), P.P: 20-30.
5. Yanagizawa-Drott, L., Kurland, L., & Schuur, J. D. (2015). Infection prevention practices in Swedish emergency departments: results from a cross-sectional survey. *European Journal of Emergency Medicine*, 22(5), P.P: 338-342.
6. Marey, R. M., Shabaan, F. M., & Abo Gad, R. A. (2020). Efficacy of Implementation Management program about Infection Control practices for Nursing Staff. *Tanta Scientific Nursing Journal*, 18(1), P.P: 41-82.
7. Hassan, H. B., & Jissir, S. A. R. (2015). Effectiveness of an educational program on nurses' knowledge about nosocomial infection: Case-control study. *Kufa Journal for nursing sciences*, 5(1), P.P: 24-32.
8. Desta, M., Ayenew, T., Sitotaw, N., Tegegne, N., Dires, M., & Getie, M. Knowledge, practice and associated factors of infection prevention among healthcare workers in Debre Markos referral hospital, Northwest Ethiopia, BMC health services research, (2018(. 18(1), 465.
9. Faris, H. I., & Hassan, H. B. (2016). Evaluation of Nurses Practices Concerning Sterile Techniques Critical Care Units in Al-Najaf AL-Ashraf City Hospitals (Master's thesis), *International Journal of Scientific and Research Publications*, Volume 6, Issue 6, June 2016694, ISSN 2250-3153, P.P: 2-5.
10. Ghorbani, A., Sadeghi, L., Shahrokhi, A., Mohammadpour, A., Addo, M., & Khodadadi, E. (2016). Hand hygiene compliance before and after wearing gloves among intensive care unit nurses in Iran. *American journal of infection control*, 44(11), P.P: 279-281.
11. Eskander, H. G., Morsy, W. Y. M., & Elfeky, H. A. A. (2013). Intensive care nurses' knowledge & practices regarding infection control standard precautions at a selected Egyptian cancer hospital, Prevention. 4(19), 160-174.
12. Kilic, S. P., Aytac, S. O., Korkmaz, M., & Ozer, S. (2016). Occupational Health Problems of Nurses Working at Emergency, *International Journal of Caring Sciences*, 9(3), P.P:1008-1009.
13. Attia, N. R., El-Din, S. M. A., Aysha, Z. M. S., & Ibrahim, M. (2016). Efficacy of implementing nursing care protocol on the incidence of ventilator associated pneumonia in Intensive Care Unit at Tanta emergency hospital, *Journal of American Science*, 12(2), P.P: 46.
14. Vinodhini, K., & DEVI, A. B. (2016). Study on Infection Control Practices among Health Care Workers in a Specialty Hospital, Chennai. Pollution Research, 35(3), P.P: 551-2.
15. Abdulhassan, A. F., & Ali, S. A. (2020). Hand Hygiene Practices and Infection Control Measures among Emergency Units Health Care Providers, *Indian Journal of Forensic Medicine & Toxicology*, 14(3), P.P: 8, 83, 14-16.