

Assessment of Nurses' Compliance with Infection Control Standard Precautions at Outpatient Clinics of Urology and Nephrology Center - Mansur University

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Abstract:

Background: Nephrology and urology patients are immuno- suppressed so they are liable to exposure to various pathogens. Compliance to infection control standard precautions protects healthcare workers and patients from exposure to pathogenic organisms. These can achieve through proper using hand hygiene, proper waste disposal, used of personal protective equipment, barriers and isolation. **Aim:** To assess the level of nurses' compliance with infection control standard precautions at outpatient clinics of urology and nephrology center. **Method:** Case study was conducted on (60) nurses who were working at outpatient clinics of urology and nephrology center- Mansoura University, Egypt, from October to December 2016. **Tools:** Four-structured questionnaire were used throughout the study for exploring nurses' demographic and occupational characteristics, their knowledge, practice and obstacles that affect nurses' compliance with infection control standard precautions. **Results:** Most of studied nurses' qualification was diploma of nursing, about their years of experience it was more than 15 years at workplace. Concerning their knowledge, 91.7% of them showed good knowledge level regarding infection control standard precautions. However, the same percent had unsatisfactory practice in practicing infection control standard precautions. Workload, inadequate resources, not continues training courses and insufficient staff was identified as barriers that hinder compliance to infection control standard precautions. **Conclusion:** The study concluded that nurses showed good level of knowledge in spite of practice showed unsatisfactory level regarding infection control standard precautions. Moreover, workload, inadequate resources, not continues training courses and insufficient staff were obstacles complained them. **Recommendations:** It was recommended continuous monitoring of nurses' practice, decrease of work load, by increasing nursing staff and providing training courses. These mentioned actions are crucial to compliance with infection control standard precautions.

Key Words: standard precautions - infection control - nursing - outpatient clinics-nurses' compliance

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I. Introduction

Standard precautions are recommended by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) for reducing the risk of transmission of blood-borne and other pathogens from both recognized and unrecognized sources of infection in health care setting^[1, 2]. Standard precautions are designed to protect healthcare professionals and patients from exposure to potentially infected blood and body fluids by applying the fundamental principles of infection prevention as hand hygiene, use of personal protective equipment, proper waste disposal and safe injection performance^[3]. Infection control and prevention measures are at the heart of the principals of nursing practice. Standard precautions have two objectives designed to reduce the risk of acquiring occupational infection firstly, to protect healthcare workers from percutaneous injury and second to prevent transmission of infection. Standard precautions are used in the care of all patients in health care settings, regardless of their diagnoses or presumed infection status. These precautions are include proper hand hygiene, proper waste disposal and used of personal protective equipment. However, lack of compliance has been commonly reported globally^[4, 5]. Nephrology and urology outpatient are theater where patients are at risk to exposure of various infections related to body fluid, blood, extensively using of sharps instruments and accidental penetrations during patient's care procedures^[6]. Effective infection control is not only an axiom of patient safety, but also an economic necessity for hospitals, outpatient clinics and other medical facilities^[7]. Although standard precautions have been routinely recommended for nearly 15 years, full adherence is unsatisfactory. Compliance with standard precautions is essential to protect patients as well as

healthcare workers from exposure to infectious agents. Non-compliance to standard precautions has been linked to a number of factors, including lack of knowledge, lack of personal protective equipment and high workload [8,9]. Many researchers focused on the factors that contribute to non-compliance with standard precautions. Several studies suggest indicated that better knowledge of standard precautions among healthcare workers was one of the predictors of better compliance. Other reported factors were lack of knowledge among healthcare workers on how to properly use protective barriers, lack of training, forgetfulness, lack in resources needed, distance to necessary equipment or facility and time limitation [10,11,12]. Therefore, the main objective of this study was to assess the level of nurses' compliance with infection control standard precautions at outpatient clinics of urology and nephrology center.

II. Material and Methods

Research design

Case study design was used in this study.

Setting

This study was carried out at Outpatient Clinics of Urology and Nephrology Center at Mansoura University

Subjects and sampling

All nurses (n= 60), who were the working at the Outpatient Clinics of Urology and Nephrology Center at Mansoura University were included in the study.

Study tools

Data were collected by using four tools that were developed by the researcher as following:

Tool I: Self-administered demographic and occupational questionnaire including: (age, sex, qualification, years of experience, and attending of training programs).

Tool II: Self-administered questionnaire to assess nurses' knowledge regarding standards precaution of infection control. The knowledge level was consisted of poor, fair and good categories

Tool III: Structured interview sheet to assess factors that affect nurses' compliance regarding standard precaution such as (lack of resources - lack of times).

Tool IV: Observation checklist was used to observe nurses' practice during implementing the different procedures. The practice level was consisted as satisfactory and unsatisfactory. Validity of the tool was tested by submitting the tool to five experts of community health nursing. As well as a pilot study was conducted on 10 % of subjects (6 nurses) were selected randomly from the main center of urology and nephrology at Mansoura University.

Official and ethical considerations:

An official permission was obtained from the director of the urology and nephrology center, Mansoura University. Ethical approval on the study was obtained from the research ethics committee of the faculty of nursing, Mansoura University. Oral consent obtained from nurses at the being of the study.

Data collection

Data was collected from October to December 2016 Outpatient Clinics of Urology and Nephrology Center at Mansoura University. The questionnaires and interview sheet were distributed to the participants at their work setting. Nurses' practice was observed by using observational checklist.

Statistical analysis

Data was analyzed by using Stand for Statistical Product and Service Solutions (SPSS version 20). Statistical techniques employed include descriptive statistics in the form frequencies and percentages. Continuous variable were presented as mean \pm standard deviation. Correlation was used for comparison within studied nurses.

III. Result

Table (1) reveals that 98.3% of the studied nurses were female, 38.3% of them were up to 35 years old. While, 75.0% of them had diploma degree in nursing, and 66.4% of them work more than 15 years. About one

third of them (31.7%) work at hemodialysis unit. Nearly half of them (48.3%) attended training programs about standard precautions of infection control.

Table (1): Distribution of the studied nurses according to their demographic and occupational characteristics

Demographic and occupational characteristics	N=(60)	%
Sex		
Female	59	98.3
Male	1	1.7
Age		
35	23	38.3
35 < 45	18	30.0
45 and more	19	31.7
$\bar{X} \pm SD$	38.0 ± 9.7	
Qualification		
Diploma of nursing	45	75.0
Diploma of Technician Nursing Institute	2	3.3
Bachelor of nursing	13	21.7
Experience years		
≤5-15	20	33.6
15 and more	40	66.4
Workplace		
Hemodialysis	19	31.7
Urology outpatient	8	13.3
Nephrology outpatient	13	21.7
Chemotherapy	5	8.3
Laboratory	10	16.7
Endoscope	5	8.3
Attending training programs		
Non	26	43.3
4	29	48.3
>4	5	8.4

Table (2) reveals that the all studied nurses showed good level of knowledge related to definition of infection control and standard precautions, cycle of infection, aim and components of standard precautions of infection control standards and post action of needle stick. Generally, the total knowledge categories showed good level of studied nurses.

Table (2): Distribution of the study nurses according to their knowledge level regarding standard precautions infection control.

Knowledge items	Score level N=60					
	(Poor <50%)		(Fair 50-75%)		(Good >75%)	
	N	%	N	%	N	%
Infection control						
Definition of infection control	2	3.3	0	0.0	58	96.7
$\bar{X} \pm SD$	40.30 ± 0.36					
Cycle of infection	0	0.0	21	35.0	39	65.0
$\bar{X} \pm SD$	37.15 ± 0.481					
Standard precautions						
Definition of standard precautions	3	5.0	0	0.0	57	95.0
$\bar{X} \pm SD$	39.95 ± 0.44					
Aim of standard precautions	1	1.7	10	16.7	49	81.7
$\bar{X} \pm SD$	38.81 ± 0.44					
Components of standard precautions	1	1.7	5	8.3	54	90.0
$\bar{X} \pm SD$	39.73 ± 0.37					
Needle stick injury						
Post action of needle stick injury	5	8.3	18	30.0	37	61.7
$\bar{X} \pm SD$	35.95 ± 0.65					
Total knowledge scores = (54)	0	0.0	5	8.3	55	91.7
$\bar{X} \pm SD$	40.08 ± 0.27					

Regarding to obstacles that hinder compliance to infection control measures table (3) illustrates that 51.7% of the studied nurses mentioned lack of PPE resources, 31.7% of them mentioned that dryness of their hands was another obstacle that hinders their compliance to hand washing. Also, 23.3% of nurses mentioned overwork load and shortage of nursing staff as challenges for compliance to standard infection control measures.

Table (3): Distribution of the studied nurses according to factor affecting their compliance to infection control standard precautions

Items	N=60	%
Hospital Factors		
Resources:		
Lack of PPE resources	31	51.7
Lack of towel or papers to dry hand	15	25.0
Vaccination		
Lack of hepatitis B vaccine	13	21.7
Attending training course:		
Workload	21	35.0
Not suitable times	9	15.0
Insufficient staff	19	31.7
Not hold training courses continually	12	20.0
Human Factors		
Hand washing		
Dryness	19	31.7
Mask:		
Shortness of breath	8	13.3
Allergy	4	6.7
Gloves		
Allergy	6	10.0
Gown		
Not sterile and has a hole or cut	15	25.0
WorkFactors		
Workload	14	23.3
Increase number of patients	6	10.0
Insufficient staff	14	23.3

Table (4) illustrates that the studied nurses showed satisfactory score level in relation to handling sharps instruments and wearing gloves. On the other hand, results showed unsatisfactory score level regarding to hand washing technique, wearing mask, and gown as well as safe injection practice. Generally, the total practice categories showed unsatisfactory score level among 91.7% of the studied nurses.

Table 4: Distribution of the studied nurses according to their practices score level regarding standard precautions infection control

Practices Categories	Score level (N=60)			
	Satisfactory (≥75%)		Unsatisfactory (<75%)	
	N	%	N	%
Hand wash (score = 11)	2	3.3	58	96.7
Gloves (score = 5)	36	60.0	24	40.0
Mask (score = 7)	3	5.0	57	95
Gown (score = 9)	9	15.0	51	85.0
Safe injection (score = 9)	8	13.3	52	86.7
Handling with sharps instruments (score = 5)	60	100.0	0	0.0
Total practices score = (46)	5	8.3	55	91.7
$\bar{X} \pm SD$	25.45 ± 7.37			

IV. Discussion

Although standard precautions have been routinely recommended for nearly 15 years, full adherence is unsatisfactory. Compliance with standard precautions is essential to protect patients as well as healthcare workers from exposure to infectious agents. Non-compliance to standard precautions increases the incidences of infection at health care settings. So updating knowledge and nursing skills can play an important area of infection control [8,9,13]. The European Center for Disease Control (ECDC) estimates that 4.1 million patients per year develop infections within the European Union (EU) as a result of health activities, and that 37,000 deaths occur annually due to such infections [14]. Nurses play a key role in infection prevention and control by using their knowledge and practice to protect themselves and patients from exposure to potentially infectious agents [15,16]. Therefore, the current study aimed at assessing the level of nurses' compliance with infection control standard precautions.

The present study revealed that, three quadrants of the studied nurses had diploma degree. Nearly half of them attended training programs in infection control. Moreover their years of experience it was more than 15 years at workplace. These results come in agreement with similar studies that revealed dominance of females, majority of nurses in their study had nursing secondary school and more than half of nurses attended infection control programs^[17,18,19,20]

Although nurses showed a good level of knowledge regarding standards, the majority of them showed unsatisfactory practice in compliance to standards. This result was consistent with two studies that revealed unsatisfactory practice of standards^[21, 22]. However the present study was in contrast with three studied different countries which showed poor knowledge regarding infection control standard precautions^[23, 24,25]

This finding was in concordance with three studies who reported that compliance with hand hygiene performance is low^[26, 27, 28]. Furthermore, subjective practice of mask and gown, the present study showed unsatisfactory performance of nurses. These finding were in the same vein with three conducted studies^[25,29,30]. In addition, safe injection practice, the present study revealed unsatisfactory performance of nurses. These results in the same line with these findings who reported that the majority of nurses had incorrect infection control performance during vein puncture injections^[22].

Regarding obstacles the hinder compliance with infection control standards precaution, the present study showed that the main work barriers were workload and insufficient staff, while the main human barriers were lack of personal protective equipment resources. In addition, the main barriers during attending training course were workload. These finding are consistent with similar studies that the most obstacles to apply infection control standards were work overload and inadequate resources, and shortage of nurses^[31, 32, 33, 34,35].

V. Conclusion

The study concluded that nurses had good knowledge regarding infection control standard precautions. However, practice was unsatisfactory about infection control standard precautions. Moreover, workload, inadequate resources, not continues training courses and insufficient staff were factors that obstacles compliance to infection control standard precautions. It was recommended the necessity of continuous monitoring of nurses' practice parallel with providing adequate resources, decrease of work load by increasing the number of nursing staff and emphasizing training courses is crucial issues that improve the compliance with infection control standard precautions.

References

- [1]. CDC, (2010). Recommendations for prevention of transmission of Immuno Deficiency Virus and Hepatitis B Virus to health care and public safety workers. MMWR 38.
- [2]. World Health Organization (2013). (revised on 2013) <http://www.who.infectioncontrolguidelines>.
- [3]. Okechukwu, E.F., & Motshedisi, C. (2012). Knowledge and practice of standard precautions in public health facilities in Abuja, Nigeria. *Int J Infect Control* 2012, v8:i3.
- [4]. Janjua, N.Z., Razaq, M., Chandir, S., Rozi, S., & Mahmood, B. (2007). Poor knowledge – predictor of non-adherence to universal precautions for blood borne pathogens at first level care facilities in Pakistan. *BMC Infect Dis* 2007. doi: 10.1186/1471-2334-7-81.
- [5]. Liz, E. (2012). Essential practices for infection prevention and control guidelines for nursing staff. Published by Royal College of Nursing, 20.
- [6]. Kidney Foundation of Canada. (2013). Facing the facts. Retrieved from: <http://www.kidney.ca/document.doc?id=4083>.
- [7]. El-Sheikh, A.A., & Abedelsatar, O.A. (2011). The effect of implementing a control action plan for infection prevention at endoscopy unit. *Egyptian Journal of Nursing*, 1(3), 64-84.
- [8]. Gammon, J., Morgan-Samuel, H., & Gould, D. (2008). A review of the evidence for suboptimal compliance of healthcare practitioners to standard/ universal infection control precautions. *J. Clin. Nurs.*; 17: 157– 167.
- [9]. Garcia-Zapata, M. R., Souza, A., Guimaradaes, J., Tipple, A., & Prado, M. (2010). 'Standard precautions: knowledge and practice among nursing and medical students in teaching hospital in Brazil', *International Journal of Infection Control*, vol. 6, no. 1, pp.2–4.
- [10]. Luo, Y., Guo-Ping, H., Jijan-Wei, Z., & Ying, L. (2010). Factors impacting compliance with standard precautions in nursing, China. *Int J Infect Dis* 2010;14(12):1106–14, <http://dx.doi.org/10.1016/j.ijid.2009.03.037>.
- [11]. Oliveira, A.C., Marziale, M.H., Paiva, M.H., & Lopes, A.C. (2010). Knowledge and attitude regarding standard precautions in a Brazilian public emergency service: a cross-sectional study. *Rev Esc Enfem USP*; 43(2):313-19.
- [12]. Vazl, K., McGrowder, D., Lindo, R.A., Gordon, L., Brown, P., & Irving, R. (2010). Knowledge, Awareness and Compliance with Universal Precautions among Health Care Workers at the University Hospital of the West Indies, Jamaica. Vol 1 Number 4; 171-181.
- [13]. Johnson, O., Asuzu, M., & Adebisi, A. (2013). Knowledge and practice of universal precautions among professional in public and private health facilities in Uyo, Southern Nigeria—a comparative study. *Ibom Med. J.* 6(1):9—191.
- [14]. Hosoglu, S., Akalin, S., Sunbul, M., Otkun, M., & Ozturk, R. (2011). The Occupational Infections Study Group, Healthcare workers' compliance with universal precautions in Turkey.
- [15]. World Health Organization (2011). Report on the burden of endemic health care - associated Infection Worldwide : clean care is healthy care, Geneva: WHO.
- [16]. Amadu, M.O., & Saka, M.J. (2012). Knowledge, Awareness and Compliance with standard precautions. *Journal Community Med Health education*, 2:131.
- [17]. Labrague, L. J., Rosales, R. A., & Tizon, M. M. (2012). Knowledge of and compliance with standards precautions among student nurses. *International journal of advanced nursing studies*. 1(2):84-97. www.sciencepubco.com/index.php/IJANS.

- [18]. Vazl, K., McGrowder, D., Lindo ,R.A., Gordon, L., Brown, P.,& Irving ,R. (2010). Knowledge, Awareness and Compliance with Universal Precautions among Health Care Workers at the University Hospital of the West Indies, Jamaica. Vol 1 Number 4; 171-181.
- [19]. Hamid, M.Z.A., Aziz, N.A., Anita, A.R., & Norlijah O. (2010). Knowledge of blood-borne infectious diseases and the practice of universal precautions amongst health-care workers in a tertiary hospital in Malaysia. Southeast Asian J Trop Med Public Health, 41(5): 1192-1199.
- [20]. Fayed, N.M., Elbahnasawy, H. T., & Omar ,T. K. (2016). Effect of Instructional program on nurses compliance with Universal precautions of infection control. International Journal of Novel Research in healthcare and nursing Vol. 3, Issue 1, PP:(81-92) , Month: Journal- April ,2016 Available at : www.noveltyjournals.com.
- [21]. Ahmed, E.R., & Khamis, M. (2013). Effect of a Developed Educational Booklet about Standards Infection Control Precautions on nurses' Knowledge and Performance at Woman s Health Center- Assiut university Egypt Med Hospital, J. Cairo. Univ., Vol, 80, No, I, September: 435-445, 2012. www.Medical Journal of Cairo University .com.
- [22]. Mohammed, M. (2010). Knowledge practice and attitude of nurses toward universal precautions in outpatient clinics at Assiut university hospitals. Retrieved February, 2016, from <http://www.philadelphia.edu.jo/newlibrary/eng/english-books/671-english-books/85820-engb-85820>.
- [23]. Ali, S., & Yousef, A. (2014). Effect of Nursing Guidelines Regarding Infection Control Measure on Performance of Intership Students in Applied Medical Science College at Hafr Al-Batin, 3(4) ,37-46.
- [24]. Hayeh, P.A., & Esena, R.K. (2013). Infection Prevention and Control Practices among Health workers at Ridge Regional Hospital in Accra of Ghana, Vol.3; Issue 8:47-55.
- [25]. Huang, C., Ma, W., & Stack, S. (2012). The Hygienic Efficacy of Different Hand-Drying Methods: A Review of the Evidence, 87, 791-798. <http://doi.org/10.1016/j.mayocp.2012.02.019>.
- [26]. Kim, P.W., Roghmann, M.C., Perencevich, E.N., & Harris , A.D. (2005). Rates of hand disinfection associated with glove use, patient isolation, and changes between exposure to various body sites. Am. J. Infect. Control; 31: 97-103.
- [27]. Akyol ,A.D. (2007) .hand hygiene among nurses in Turkey . Opinion and Practice , Journal of Clinical Nursing ;4 (16) : 431- 437.
- [28]. Kalata, N.L., Kamange, L., & Muula, A.S. (2013). Adherence to hand hygiene protocol by clinicians and medical students at Queen Elizabeth Central Hospital, Blantyre-Malawi. Malawi Medical Journal, 25(2), 50-52. <http://doi.org/10.4314/mmj.v25i2>.
- [29]. Wagner, P.D. J., Parker, C. E., Mavis, B., & Smith, M.K. (2011). An interdisciplinary infection control education intervention : necessary but not sufficient. Journal of Graduate Medical Education ,3(2), 203-10. <http://doi.org/10.4300/JGME-D-10-00120.1>.
- [30]. Gulit, K. (2014). Assessment of knowledge ,Attitude And Practice of Health care workers on Infection Prevention in Health Institute Bahir Day City Administration. Science Journal of Public Health, 2(5), 384. <http://doi.org/10.11648j.sjph.20140205.13>.
- [31]. Picheansathin, W., Pearson, A., & Suchaxaya ,P. (2008). The effectiveness of a promotion program on hand hygiene compliance and nosocomial infection in a neonatal intensive care unit. International Journal of Nursing Performance .2008;14(14) :315-12-12.
- [32]. Bialachowski ,E.A. (2008). Long term care registered nurses' perceived barriers and facilitators to implementing Infection prevention and Control best Practice . D'youville College . pp47-69.
- [33]. Najeeb, N., & Taneepanichsakul, S. (2008). Knowledge, attitude, and practice of standard and transmission-based precautions of doctors and nurses in tertiary and secondary health care settings of Maldives. Journal of Health Research, 22, 45-48.
- [34]. Eskander, K. (2013). Intensive care nurses' Knowledge and Practice regarding Infection Control Standards Precautions at a selected Egyptian cancer Hospital. Journal of Educational and Performance www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (online) Vol, 4, No, 19, 2013.
- [35]. Stone ,S.P., Cooper ,B.S., Kibbler, C.C., et al., (2013). The orion statement: guidelines for transparent reporting of outbreak reports and intervention studies of nosocomial infection. J Antimicrob Chemother; 59:833-40.

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