



Compliance with Standard Precautions Among Operating Room Nurses at a University Hospital, Egypt

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Abstract

Standard precautions (SPs) have been introduced as means to protect health care workers (HCWs) from exposure to blood borne pathogens (BBPs). Few studies have been conducted to identify the level of compliance with SPs among nurses.

Aim: This study determined the level of compliance with SPs among operating room (OR) nurses.

Design: A cross sectional survey was carried out in this study.

Sample: A convenient sample of 37 OR nurses working in the morning shift.

Setting: The sample was recruited from three specialty areas (general, cardiothoracic and orthopedic surgery) at a university hospital, Egypt.

Methodology: A Compliance Assessment Sheet (CAS) consisted of two sections; The first section was used to collect self-reported data on (A) Demographic variables related to the OR observed subject and (B) Background data related to OR nurses' variables; The second section was observation checklist that identified the occurrence of eight SP practices.

Results: The result showed low compliance level with SPs. None of OR nurses in the three specialty areas complied with goggles wear. The highest level of compliance with SPs was among OR nurses in cardiothoracic surgery; while general surgery was the lowest in compliance.

Conclusion: The study concluded that, the levels of compliance among OR nurses under the study were low.

Recommendation: The results can be used to enhance nurses' safety by focusing on areas of non-compliance.

Keywords: Compliance; Standard precautions (SPs); Operating room (OR); Blood borne pathogens (BBPs); Health care workers (HCWs)

Introduction

Standard precautions have been reported as an effective means of providing protection, both to health care workers (HCWs) and to patients [1,2]; but only when they are systematically and fully implemented [3]. Although SPs are simple to understand and implement, there is a marked reluctance among HCWs to comply with them fully [4].

Standard precautions considered as barriers and work practice controls established to prevent sharp injuries and blood exposure. Despite these precautions, there was limited success in reducing the incidence of sharp injuries due to sub-optimal adherence to SPs [5,6]. Results of the current study provides information regarding the level of compliance with SPs among OR nurses and help in

identifying areas for training and education. It may also be used to evaluate progress in compliance among OR nurses over time.

Methodology

Aim of the Study: The aim of this study was to determine the level of compliance with SPs among OR nurses at university hospital in Egypt.

Research Questions: To achieve the aim of this study the following research question was formulated: What is the level of compliance with SPs among OR nurses under study?

Setting: At Kaur EL Aini Hospital; General surgery theaters include eight theaters, four in each side; while the cardiothoracic

surgery is divided into two main theaters. The general and cardiothoracic surgery theaters are located in the third floor. The orthopedic surgery is located in the second floor and includes five main theaters.

Sampling: A convenient sample of 37 OR scrub nurses working in the morning shift in three selected specialty areas (general, cardiothoracic, and orthopedic surgeries) were recruited as a study sample. Nurses with a working experience less than one year were excluded from the study. The entire sample of nurses was (16 in general, 9 in cardiothoracic, and 12 in orthopedic surgeries).

Instruments: A tool was designed by the investigator to collect data pertinent to the study variables. It was developed after extensive literature review and submitted to a panel of three reviewers and experts in medical surgical and OR nursing. Revision of the tool was made based on feedback from reviewers and before conducting a pilot study. The tool (Compliance Assessment Sheet) (CAS) consists of two sections:

- I. The first section was used to collect self-reported data on (A) demographic variables related to the OR observed subjects as age, gender, educational qualification, years of working experience in the nursing field; and in the OR, and number of OR nurses in the three surgical specialty areas, in addition to (B) background data related to OR nurses' variables as in-service training courses in infection control (IC), vaccination status against hepatitis C virus (HBV), OR nurses' awareness regarding IC policies and procedures, number of surgical procedures done in each specialty area, and hours of observation.
- II. The second section was the observation checklist that identified the occurrence of eight SP practices. It included a list of compliance with SPs performance criteria of each standard with Yes/No option to designate whether the practice was performed correctly or not; because the importance of compliance to SPs, each practice was counted correct only when all required criteria "sub items" were met.

Practices were observed and recorded by the researcher. Standard Precaution practices were related to: headgear (two items), surgical mask (five items), goggles (two items), OR boots (three items), surgical hand washing (fifteen items), surgical gown (seven items), surgical gloves (ten items) and handling sharp instruments (six items). The observed SPs compliance were quantified as percentage [the denominator (expected) was the total number of potential situations calling for SPs, and the nominator (observed) the actual number of SP items precautionary were implemented correctly. The level of compliance of each SP practice and the total of the eight standards were grouped into low (0%-79%), moderate (80%-99%) and high (100%).

Procedure: The research proposal was approved by the ethical committee at the Faculty of Nursing, Cairo University, after which an official permission for conducting the study was obtained from the hospital director as well as the head of the ORs, and nurse supervisors. Measures were taken to protect the subjects' ethical rights. Each potential subject was informed and signed an informed consent clarifying the purpose and the nature of the study. Voluntary participation, confidentiality and anonymity of responses were assured. The researcher developed a schedule in order to observe SP practices in the three OR specialty areas equally and randomly by rotation. Each observation period covered the eight practiced SP measures. Observation started from the beginning of putting on the headgear, and then all the followed standards till the end of the surgical procedure without interrupting the sterility of the surgical field and with good visualization of the practice. Practices were recorded using the observation checklist. Data collection period continued for six months started from April till October 2012. A total of 96 surgical procedures were attended and 768 SP practices were monitored with a total hour 457 hours.

Data Analysis: Upon completion of data collection, the data were coded, tabulated, and analyzed by computer using the "Statistical Package for Social Sciences" (SPSS) 11.5 version. Descriptive statistics such as frequency, percentage, mean, and standard deviation were utilized to analyze data pertinent to the study variables.

Results

Table 1: Frequency, and Percentage Distribution of Demographic Variables Related to the OR Observed Subjects (n=37): 26/37.

Demographic Variables	No.	%
Age Group (yrs)		
20-	4	11%
25-	3	8%
30-	9	24%
35-	15	41%
40-	5	13%
45-	1	3%
Mean± SD	35.08±6.47	
Gender		
Male	7	19%
Female	30	81%

Educational Qualification		
Diploma Nursing	34	91.90%
Technical Nursing	3	8.10%
Working Experience in Nursing Field (yrs)		
1-	3	8%
5-	4	11%
10-	30	81%
Working Experience in the OR (yrs)		
1-	6	16%
5-	5	14%
10-	26	70%
OR Nurses in Surgical Specialty Areas		
General	16	43%
Cardiothoracic	9	24%
Orthopedic	12	33%

Table 1 shows that OR nurses aged 35 to less than 40 years old had the highest frequency 15/37 (41%), and those aged more than 45 years old had the lowest frequency 1/37(3%) with a mean of 35.08±6.47 years old. There were more females 30/37(81%) than males 7/37(19%). OR diploma nurses were the majority

34/37(91.9%). OR nurses with a working experience in the nursing field (10 years and more) were 30/37(81%) and those who had working experience in OR (more than 10 years) were (70%). OR nurses in general, cardiothoracic and orthopedic surgical specialty areas were 16/37(43%), 9/37(24%) and 12/37(33%) respectively.

Table 2: Frequency and Percentage Distribution of Data Related to the OR Nurses' Variables (n=37).

Background Data Related to OR Nurses' Variables	No.	%
Infection Control Courses Attended by OR Nurses		
Yes	24	65%
No	13	35%
Vaccination Status Against HBV		
Yes	30	81%
No	7	19%
OR Nurses' Awareness Regarding Infection Control Ps & Ps		
Yes	37	100%
Number of Surgical Procedures Done in Each Specialty Area		
General surgery	40	42%
Cardiothoracic surgery	24	25%
Orthopedic surgery	32	33%
Observation Hours of Surgical Procedures Done in the Three Specialty Areas (457 hrs)		
<3	4	4.20%
3-	80	83.30%
5-	12	12.50%
Mean± SD	4.76±0.72	

Table 2 shows that OR nurses who attended IC courses were 24/37 (65%), and who were vaccinated against HBV were 30/37 (81%). All OR nurses in the three specialty areas were aware of IC policies and procedures. 40/96 (42%) of the total surgical procedures were done in general surgery, while 32/96 (33%) in orthopedic and 24/96 (25%) in cardiothoracic surgery. Almost (83.3%) of the total surgical procedures were continued for (three to less than five hours). The total observation hours of nurses'

practices regarding SPs were 457 hours with a mean of 4.76±0.72 hours.

Table 3 illustrates that the compliance level with headgear practice among OR nurses was 79/96 (82.3%) (Moderate compliance level). Compliance level with the use of mask and surgical gloves were 62/96 (64.6%) (Low compliance levels). The compliance with the use of OR boots, surgical hand washing,

surgical gown, handling sharp instruments were 71/96 (74%), 1/96 (1%), 27/96 (28.1%), and 30/96 (31.2%) respectively (Low compliance levels). The compliance with goggles practice was zero, it was worth saying that, the total mean of compliance level with the eight SPs practices among OR nurses was low (43.22±32.54).

Table 3: Frequency and Percentage Distribution of Compliance Level with Each SP Practice (N=96)*.

SP Practices	No.	%	Compliance level (Low-Moderate-High)
Headgear	79	82.30%	Moderate
Surgical mask	62	64.60%	Low
Goggles	0	0%	Low
OR boots	71	74%	Low
Surgical hand washing	1	1%	Low
Surgical gown	27	28.10%	Low
Surgical gloves	62	64.60%	Low
Handling sharp instruments	30	31.20%	Low
Mean± SD	43.22±32.54		Low

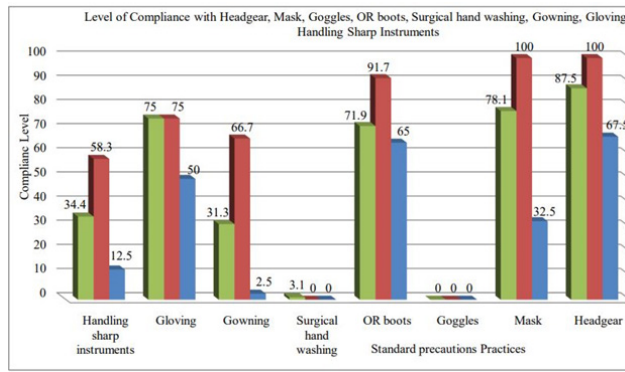


Figure 1: Highest level of compliance occurred in cardiothoracic surgery with the use of head gear and mask.

Table 4: Frequency and Percentage Distribution of the Compliance Level with the Eight SPs Practices in Each Surgical Specialty areas.

OR Surgical Specialty Areas	Total Number of the Eight SPs Practices (768)	Compliance Level with the Eight SP Practices		
		No.	%	(Low- Moderate- High)
General	40 x 8 = 320	92	28.75	Low
Cardiothoracic	24 x 8 = 192	118	61.46	Low
Orthopedic	32 x 8 = 256	122	47.66	Low

Table 4 shows that the compliance level with the eight SPs practices were low in the three surgical specialty areas; general 92/320 (28.75%), cardiothoracic 118/192 (61.46%), and orthopedic 122/256 (47.66%). Figure 1 shows that the highest level of compliance occurred in cardiothoracic surgery with the use of head gear, and mask (100%), (100%) respectively. Compliance level with OR boots was moderate (91.7%), While it was low with gowning, gloving, and handling sharp instruments and zero with goggles and surgical hand washing. In orthopedic surgery the level of compliance with headgear was moderate (87.5%) and low with gowning, gloving, handling sharp instruments, surgical hand washing, and zero with goggles. The compliance level with SP practices in general surgery was the lowest in the three specialty areas. Headgear (67.5%), mask (32.5%), OR boots (65%), gowning (2.5%), gloving (50%), handling sharp instruments (12.5%), and zero with goggles and surgical hand washing.

Discussion

Although OR nurses in cardiothoracic specialty area had the highest compliance level with headgear and surgical mask practices, the total compliance level with the eight SPs was low. Cardiothoracic surgery area is the highest in risk regarding blood borne exposure as risk increases with longer, more invasive, and higher blood loss procedures. Consistent with other studies, in a survey study on compliance with SPs among OR nurses in South Korea, Jeong et al. [7] found that OR nurses rarely complied with SPs, especially with using protective eye wear (goggles). Also, in a study done by Ebied [8] she reported that masks, boots were rarely used by nurses when they dealt with blood or body fluids. Additionally, Abou El-Enein & El Mahdy [9] mentioned that the compliance with protective eye wear (goggles) was zero and poor with surgical hand washing practice. On the contrary Cutter & Jordan [10] showed that, half

of the total sample of OR nurses in their study complied with eye protection for example.

Conclusion

In conclusion the compliance level with the SPs among OR nurses in this study was low. The results of this study are in agreement with those of previous studies that reported a less than 100% compliance rate with SPs, which has implications for staff safety, patient protection and the care environment. Furthermore, OR nurses were selective in their compliance to certain measures of the precautions.

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