

# Midwives and Nurses Compliance with Standard Precautions in Palestinian Hospitals

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## Abstract

Midwives and nurses should use the standard precautions as the basic level of infection control precautions when delivering care to all patients, regardless of their presumed infection status. Therefore midwives and nurses should have sound knowledge and compliance with standard precaution. Aim of the study: The study aimed to assess the level of the compliance of standard precautions among the midwives and nurses in the Palestinian Hospitals. Method: A cross sectional study was conducted from May to June 2015 on 81 midwives and nurses from Palestinian hospitals. The data were collected from labor rooms and postpartum departments of Palestinian hospitals. Data were collected using pretested questionnaire on 81 midwives and nurses selected by convenience sample. Results: The current study showed that the average of standard precautions knowledge level and compliance are 74.6% and 83.8% respectively. There are an association between age, education, work experience, and compliance with standard precautions at  $p < 0.05$  (0.000, 0.031, and 0.043) respectively. At the same time no significant association between training courses and compliance to standard precautions at  $p < 0.05$  (0.191). Conclusion: The midwives and nurses in the current study for both knowledge and compliance have high level regarding standard precautions. There is an association between age, education, work experience, and compliance with standard precautions. Recommendations: Knowledge of midwives and nurses should be updated; the importance of latest evidence-based practices of infection control in continuing education/training program should be emphasized; and training programs for newly midwives and nurses about standard precaution and at regular intervals should be provided.

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## Keywords

### Nurses, Midwives, Compliance, Standard Precautions

## 1. Introduction

Health care workers are constantly exposed to various microorganisms which caused for them serious or even lethal infections [1]. Increased infant mortality in developing countries resulted from hospital acquired infections which is one of the main causes as some studies have shown [2].

Statistics reported by World Health Organization (WHO), 1,400,000 people suffer from complications related to HAI. The rate of preventable hospital acquired infections in developing countries due to medical care is estimated to be about 40% or above [3]. Nosocomial infections, such as endometritis, postoperative pelvic infection, urinary tract infections, neonatal sepsis, etc., are serious complications in normal vaginal delivery.

The incidence of postoperative infections approaches 38%. Surgical site infection which is the third most common nosocomial infection includes obstetrics and gynecological sources [4]. An understanding of the fundamentals of the host, surgical risk factors and vaginal flora can aid in prevention of postoperative infections which result in significant morbidity and mortality [4].

It has been reported that the risk of health care-associated infection is 2 to 20 times higher in developing countries in comparison with developed countries and 5% to 10% of patients admitted to hospitals in developed countries acquire these infections (WHO, 2008) [5].

Infection control measures include appropriate hand hygiene and the correct application of basic precautions during invasive procedures are simple and of low-cost, but need health staff accountability and behavioral change, in addition to improve staff education, reporting and surveillance systems [6].

The human element stays the efficient role in increasing or decreasing the chances of catching HCAI [7]. Healthcare workers compliance with standard precautions has been recognized as an important means to prevent and control health care-associated infections in patients and health workers [8].

Standard precautions are defined as a set of infection prevention practices that apply to all patients, regardless of suspected or confirmed diagnosis or presumed infection status [9]. These precautions considered the basic level of infection control precautions which are to be used, as a level of precautions [10].

Standard precautions are recommended when delivering the care to all clients, regardless of their health condition. It is also recommended that when handling equipment and instruments are contaminated or suspected of contamination, and in situations of contact risk with body fluids, blood, secretions and excretions except sweat, without considering the presence or absence of visible blood and skin with solution of continuity and mucous tissues. They included precautions against agents that are transmitted by the following routes of transmission: droplet, air-borne, and contact routes [10] [11].

Standard precautions aim to prevent and/or reduce transmission of HAI, and, at the same time, to protect nurses from sharp injuries. These aims can be achieved by the application of standard precaution measures which consist of the following elements: hand hygiene, prevention of sharp injuries, and personal protective equipment (gloves, gown, gaggle, facemasks, head protection, foot protection and wearing face shields) [10].

Nurses are often exposed to several infections during the course of carrying out their nursing tasks [12]. Nosocomial infection or Health-care-associated infection (HCAI) refers to infection that is acquired during hospitalization, the process of care and not manifested at the time of admission to a hospital or other health-care facility [13].

Nurses and midwives are directly worked with patient and susceptible to acquire infections from patients especially blood borne diseases. It has been estimated that more than 170 million people worldwide are infected with Hepatitis C and about 40 million are living with HIV/AIDS [14].

The critical role of nurses in patient care emphasis on the role of the control hospital acquired infections. So the nurses are the key members of infection control team in hospitals. Therefore, nurses should have good knowledge and skills in the field of infection control [15].

As revealed from evidence, the proper compliance with Standard Precautions can protect health care workers from various kinds of Occupational Blood Exposure, Hospital Acquired Infections including pneumonia and

intravascular catheter infections [16]. [17] presumed that 38.2% had fair knowledge of standard precaution, and 77(37.8%) had good knowledge. However 24.0% of the studied sample had poor knowledge level. According to their compliance 52.9% had fair level, 45.6% had good level and only 1.5% had poor level.

A study conducted by [18] about hand hygiene among health care staff noted that nurses' knowledge about standard precautions is insufficient and many of them believed that by wearing gloves no need for washing hands). Another study results revealed that only 43% of nurses had a good knowledge in this regard [19]. A descriptive and cross-sectional study conducted by [20] reported that the participants have an acceptable level of knowledge regarding hand hygiene. The work experience and history of previous training were the most important predictors of participants' knowledge about hand hygiene.

A cross sectional study conducted among nurses in governmental hospitals of Palestine revealed that, around half of the subjects had fair knowledge level and the most of them had good practice level of infection control [21].

## 2. Subjects and Method

### 2.1. Aim of the Study

The study aimed to assess the level of the compliance of standard precautions among the midwives and nurses in the hospitals of Palestine.

### 2.2. Research Questions

The following three research questions were formulated to achieve the aim of the current study:

1. What are levels of midwives' and nurses' knowledge about the standard precautions at the selected Palestinian hospitals?
2. What are levels of midwives' and nurses' compliances of the standard precautions at the selected Palestinian hospitals?
3. Are there relationship between the standard precautions knowledge and compliance with age, gender, education, years of experience, and training course on standard precautions?

### 2.3. Research Design

It is a descriptive, cross-sectional study.

### 2.4. Study Setting

The data were collected from labor rooms and postpartum departments of Palestinian hospitals, eight of them governmental (Alia hospital in Hebron city, Al Husain hospital in Beit Jala, and Abu Al Hassan hospital in Yatta, Rafedia in Nablus city, Thabet Thabet n Tulkarm city, Khaleel Solaiman in Jenin city, Darweesh Nassal in Qalqellia city, and Yaser Arafat in Salfit city) and three private hospitals (Al-Ahli Hospital in Hebron city, Al Mizan Hospital in Hebron city, and *Arab* Society hospital in Bethlehem city)

### 2.5. Study Period

The study was conducted from May to June 2015 in the targeted hospitals.

### 2.6. Study Sample

A convenience sample includes 81 midwives and nurses.

### 2.7. The Inclusion Criteria

Palestinian midwives or nurses who work in the selected departments of the targeted hospitals with full time employment.

### 2.8. Tool of the Study

A self-administrative questionnaire was developed by researchers and used to assess:

a) Socio-demographic characteristics of subjects consist of age, marital status, Hospital, Qualification, Department of work, working experience, Special sharps disposal box in your department, Hepatitis B vaccine, and Infection control training course.

b) Subjects' knowledge consists of 32 items, each item had a group of answer points, one point was awarded for correct answer; incorrect or I don't know answer took zero. The correct responses were summed up to get a total knowledge scores for each participant. Total score for all questions reached 32 grades and transformed to 100%.

c) Compliance consist of 23 items using a 3-item Likert scale (every time (3), sometime (2), and never (1)). The compliance scores were summed up to get total scores and transformed to 100%.

### 3. Validity and Reliability of the Study

To assure the content validity of the questionnaire, it was revised and validated by panel of 5 experts in academic and health field; they agreed and no comments. Internal consistency among the questionnaire items was assessed 0.88 Cronbach's alpha ( $\alpha$ ) and it was considered acceptable.

### 4. A Pilot Study

Ten midwives from the labor department of Nablus special hospital as a pilot study was included to assess the clarity of the questions, effectiveness of instructions, completeness of response sets, time required to complete the questionnaire and success of data collection technique. Pilot subjects were asked to comment on the applicability and appropriateness (validity) of the questionnaire. All questions were answered no clarity of questions were required. Then, the researchers determined that it would take 20 minutes to complete the questionnaire.

### 5. Ethical Considerations

This study was approved by the nursing department, Arab American University. This emphasized by MOH agreement with their permission for the investigators to utilize the targeted hospitals. Approval from midwives and nurses were obtained. Several strategies were utilized to protect the nurse's rights who agreed to participate in this study. First, oral verbal consent of the midwives and nurses was obtained prior to the administration of the questionnaire. The midwives and nurses were informed of the purpose of the study, and that they had the right to refuse to participate. Also the voluntary nature of participation was stressed as well as confidentiality. Furthermore, the midwives and nurses were told that they can refrain from answering any questions and they can terminate at any time. Anonymity of them was maintained at all times.

### 6. Results

**Table 1** presents demographic characteristics of the studied sample. It clarifies that the majority of the studied nurses 64 (79.04%) were in the age group of 20 - 30 years, and 57 (70.4%) had bachelor degree. However, around two thirds 52 (64.2%) were single, and 53 (65.4%) had less than five years of experience. All of the samples assured that they have sharp box 81 (100.0%). Regarding attendance of training courses, the most of the studied sample 70 (86.4%) were received training course about infection control and 77 (95.1) had vaccinated against hepatitis B.

**Table 2** presents the knowledge and compliance mean of the universal precautions among midwives and nurses in the targeted settings. It clarified that the knowledge mean was 74.57% while compliance mean was 83.8%. Hand washing knowledge and compliance items had the highest mean 91.8% and 86% respectively while the knowledge about infection microorganisms had the lowest mean 56.9%. At the same time, both sharp box and needle using compliance items had the lowest mean according to universal precautions compliance 78.2%.

**Table 3** shows percentage distribution of the participants according to their knowledge and compliance of standard precautions. It clarifies that around half of the participants 40 (49.4.0%) had fair knowledge level, 33 (40.7%) had good knowledge, and 8 (9.9%) had poor knowledge level. On the other hand, it indicated that two thirds of the participants 51 (63.0%) had good compliance, 27 (33.3%) had fair compliance, and the rest 3 (3.7%) had poor compliance.

**Table 4** shows a comparison between the mean of the knowledge scores and the socio-demographic characteristics of the studied sample. It displays that high mean knowledge scores were found among those who were at

**Table 1.** Assessment of the socio-demographic and characteristics of the sample.

Parameters		No.	%
Age	20 - 30 years old	64	79.0
	31 - 40 years old	10	12.3
	More than 40	7	8.6
Education	Nursing diploma	21	25.9
	Bachelor	57	70.4
	Master	3	3.7
Marital status	Single	52	64.2
	Married	29	35.8
Department	Labor room	52	64.2
	Post partum ward	29	35.8
Experience	5 years or less	53	65.4
	6 - 15 years	18	22.2
	more than 15 years	10	12.3
<b>Sharp box</b>	Yes	81	100.0
	No	0	00.0
<b>Training course</b>	Yes	70	86.4
	No	11	13.6
Hepatitis B vaccine	Yes	77	95.1
	No	4	4.9

**Table 2.** Assessment of the knowledge and compliance of the universal precaution among midwives and nurses.

Knowledge and compliance mean of universal precautions						
Universal precautions Knowledge	N	Mean	Std. Deviation	Universal precautions compliance	Mean	Std. deviation
Hand washing	81	91.8210	11.71946	Hand washing	86.0082	15.34399
Wearing gloves	81	58.8477	19.73548	Wearing gloves	85.9259	17.70122
Needles using	81	77.7778	19.00292	Needle using	78.1893	20.96767
Sharp box	81	74.0741	35.45341	Sharp box	78.1893	23.07024
Medical waste disposing	81	82.2222	29.83287	Gown and mask	80.4527	21.04726
Gown and mask	81	82.0988	31.92632	<b>Total compliance</b>	<b>83.8075</b>	<b>15.78778</b>
Knowledge about infectious microorganisms	81	56.9959	32.36770			
<b>Total knowledge</b>	<b>81</b>	<b>74.5756</b>	<b>12.70105</b>			

**Table 3.** Assessment of the midwives and nurses knowledge and compliance level of universal precautions.

Item	levels of standard precautions			Total
	Poor	Fair	Good	
Knowledge	8 (9.9%)	40 (49.4%)	33 (40.7%)	81 (100.0%)
Compliance	3 (3.7%)	27 (33.3%)	51 (63.0%)	81 (100.0%)

**Table 4.** The relationship between the age, education, experience, and training course of the midwives and the nurses towards the knowledge of universal precautions.

Items		N	Mean	Std. deviation	F	Sig
Age	20 - 30 years old	64	74.7559	12.21532	1.607	0.207
	31 - 40 years old	10	78.4375	7.13371		
	More than 40	7	67.4107	20.55996		
Education	Diploma	21	72.7679	12.30881	1.801	0.172
	Bachelor	57	74.5614	12.89064		
	Master	3	87.5000	0.00000		
Experience	5 years or less	53	75.9434	10.28414	0.895	0.413
	6 - 15 years	18	72.2222	14.96353		
	Above 15 years	10	71.5625	19.17629		
Training course	Yes	70	75.3125	12.15733	1.751	0.190
	No	11	69.8864	15.57948		

the age group of 31 - 40 years, master degree, had years of experience 5 years or less, and had attended training courses with means of (78.4375, 87.5000, 75.9434, and 75.3125) respectively. No significant statistical differences were found in mean knowledge scores in relation to age, education, experience, and training course ( $F = 1.607, 1.801, 0.895, \text{ and } 1.751$ ) at  $p < 0.05$  (0.207, 0.172, 0.895, and 0.190) respectively.

**Table 5** shows the comparison of mean compliance scores in relation to socio-demographic characteristics of the studied sample. It displays that high mean practices scores were found among those who were at the age group 20 - 30 years old, bachelor degree, had years of experience 5 years or less, and attended training courses with means of (87.6585, 86.6260, 86.9292, and 84.7205) respectively. No significant statistical differences were found between mean practice scores towards training course ( $f = 1.740$ ) at  $p < 0.05$  (0.191). At the same time, significant statistical differences were found between mean practice scores towards age, education, and experience ( $f = 14.294, 3.620, \text{ and } 3.276$ ) at  $p < 0.05$  (0.000, 0.031, and 0.043) respectively.

**Table 6** shows that there was significant statistical difference found between knowledge and compliance of standard precautions of the studied sample ( $t = 4.590$ ) at  $p < 0.05$  (0.000).

## 7. Discussion

Hospital acquired infection is a common problem all over the world. Therefore, up to date knowledge and nurses midwives skills can play important roles in standard precautions. Midwives and nurses should have the opportunity to practice standard precautions on a day-to-day basis as an integral part of patients' care. The outcome of this study showed that the average of the knowledge level with standard precaution among the midwives and nurses was 74.6%. The finding of this study is different from [21] which revealed that knowledge level rate of standard precaution by nurses is around 54% in Palestine.

According to the compliance with standard precaution among the midwives and nurses the average was 83.8%. It could be said from this result that the level of compliance with standard precaution is high. This may due to the work climate of the hospitals. This finding consistent with [22] study which discovered that promotion of safety climate often time leads to compliance to standard precaution. Another study, [23] supports these finding which reported that wearing of sterile surgical gloves by health workers is very conducive for the patient and for the protecting against occupational risk caused by blood borne infections from patients as well as cross-infection. Also, this finding is in line with the work of [21] which showed that the majority of the Palestinian midwives and nurses had good practice towards infection control. The finding of this study is inconsistent with [24] which revealed that compliant rate of standard precaution by nurses is less than 38% in London.

The findings of the study revealed that the average of the knowledge level of hand washing, wearing gloves, needle using, sharp box, medical waste disposing, gown and mask, and knowledge about infection microorganisms

**Table 5.** The relationship between the midwives and nurses age, education, experience, and training course towards the compliance of universal precautions.

Items		N	Mean	Std. deviation	F	Sig.
<b>Age</b>	20 - 30 years old	64	87.6585	12.33539	14.294	0.000
	31 - 40 years old	10	63.4783	21.95598		
	More than 40	7	77.6398	10.54614		
<b>Education</b>	Diploma	21	76.1215	20.45286	3.620	0.031
	Bachelor	57	86.6260	13.28288		
	Master	3	84.0580	0.00000		
<b>Experience</b>	5 years or less	53	86.9292	12.35483	3.276	0.043
	6 - 15 years	18	78.9050	23.73723		
	Above 15 years	10	76.0870	9.88274		
<b>Training course</b>	Yes	70	84.7205	15.78504	1.740	0.191
	No	11	77.9974	15.22523		

**Table 6.** The relationship between the midwives and nurses knowledge and compliance of universal precautions.

Item	Mean	N	Std. deviation	t	df	Sig.
<b>knowledge</b>	74.5756	81	12.70105	4.590	80	0.000
<b>Compliance</b>	83.8075	81	15.78778			

were (92%, 59%, 78%, 74%, 82%, 82%, and 56%) respectively. The implication of this finding is that the knowledge level of the standard precautions is well in hospital settings except the knowledge of microorganisms which need more attention on it.

It was observed from the findings that the midwives and nurses adhered strictly to the use of the standard precautions of hand washing, wearing gloves, needle using, sharp box, gown and mask (86%, 86%, 87%, 78%, and 80%) respectively. The implication of this finding is that the use of the standard precautions of hand washing is well established in the clinical and hospital settings. This is in line with the previous findings of [25] that compliance on the part of healthcare workers with standard precautions has been recognized as an efficient means to prevent and control health care-associated infections in patients and health workers.

Lastly, the outcome of this study revealed an association between age, education, work experience, and compliance with standard precautions. At the same time no significant association between training courses and compliance with standard precautions. This may due to that these training courses not specific for standard precaution.

## 8. Conclusion

Knowledge and compliance of standard precaution of midwives and nurses cannot be neglected as it has proved to be of great importance as they are susceptible to different infection and diseases when precautionous measures are not properly. Based on the findings of this study, it can be concluded that midwives and nurses in the current study for both knowledge and compliance have high level regarding standard precautions. There is an association between age, education, work experience, and compliance with standard precautions.

## 9. Recommendations

The study recommends

- Keep updating knowledge and compliance of midwives and nurses according standard precaution through continuing in-service educational programs.

- Emphasizing the importance of the latest evidence-based practices of infection control in continuing education/training programs.
- Training programs for newly nurses and midwives according standard precautions and must be at regular intervals.
- This study should be replicated using observation checklist to assess the level of compliance.

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