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Compliance With The Standard Precautions: An Infection Control Measure Of Nurses In Ilocos Sur

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Abstract This study determined the level of compliance with the standard precautions among nurses in government hospitals of Ilocos Sur during the Calendar Year 2016. It also looked on the relationship between the respondents' level of compliance to the standard precautions and the socio-demographic and hospital-related profile factors. The descriptive-correlational research design was employed. The respondents were the 45 nurses currently employed in the selected government hospitals in Ilocos Sur namely Ilocos Sur Provincial Hospital – Gabriela SIlang, Ilocos Sur District Hospital – Magsingal, Ilocos Sur District Hospital – Sinait, Ilocos Sur District Hospital – Narvacan, Ilocos Sur District Hospital – Sta. Lucia. A questionnaire-checklist adopted from the study of Dizon (2004) was utilized. The data were treated and interpreted using frequency, percentage, mean, and Simple Linear Correlation Analysis. Based on the findings of the study, the following conclusions were drawn: 1) The greater number of the respondents are in their middle age, female, single, permanent staff nurses, young in the service and no attendance to seminars/trainings. Most of the respondents are assigned to wards, employed in the primary and secondary hospitals and take care of five patients per shift. 2) In general, the overall level of compliance of the respondents to the standard precautions is "Very High". 3) As a whole, the socio-demographic factors and hospital-related profile of the respondents are not correlated significantly with the level of compliance with standard precaution.

1. Introduction

Nurses are the front liners in any health institutions. They provide the tender and loving care to their patients especially for their fast recovery. With their commitment to serve, they sometimes neglect their personal safety. They are exposed to threats of the different infections like bacteria, fungus and viruses. These bad foreign bodies maybe contracted directly from infected persons, contaminated equipment, and airborne viruses via food or water.

Because of the nature of their work, nurses face daily with potential exposure to patient's body fluids (including blood, urine, and amniotic fluid). Exposure may also come in the way of precautions injury from contaminated needles and sharp instruments that abound in any area/suite they are assigned. As a result of these exposures, nurses are at increased of exposure to blood-borne pathogens.

As cited in the study of Logan (2002), occupational safety in the healthcare workplace is a serious concern. Among the potential sources of injury is the risk of exposure to infectious diseases through the ordinary actions involved in the care of the patient. The Occupational Safety and Health Administration (OSHA, 2002) estimates that 5.6 million health care workers (HCWs) who handle sharp devices are at risk of occupational exposure to human Immunodeficiency Virus (HIV), Hepatitis B virus, Hepatitis C virus and other blood-borne pathogens. Sharp devices include needles, surgical instrument, lancets, and glass are capable of penetrating the skin (Hershey & Martin, 1994). Although disease transmission can occur by inoculation from other sources, penetrating sharp' injury, such as needle stick injury sustained from infected person, carries the greatest threat of disease transmission

(Marcus et. al., 1998). No-intact skin, as well as parenteral and mucous membrane routes, has been implicated in transmission of infectious disease in the workplace (OSHA, 1996). The National Institute for Occupational Safety and Health (NIOSH, 1999) reported that nursing staff and doctors sustain a large percentage of the estimated 8000,000 needle stick injuries that occur annually in hospitals.

The Center for Disease Control and Prevention (CDC) published specific universal/standard precautions guidelines that address the issue of prevention of occupational exposure to blood-borne pathogens. These guidelines include the recommendations for appropriate protective garments and barrier equipment, proper handling of sharps, and the vaccination of all at-risk health care workers. These recommendations introduce the concept that all patients should be assumed to be infected with HIV and other blood-borne pathogens. Given the risks of acquiring diseases from blood-borne pathogens, it would be reasonable to expect that nurses would take precautions against such exposure very seriously. However, recent studies have shown that compliance with universal/standard barrier precautions in the high-risk setting of emergency rooms, surgical suites and critical care units is less that optimal. Compliance with universal/standard precautions thus, becomes and important issue and determining the reasons for failure to comply with universal precautions become an important priority as well (Helfgott, et. al, 1998).

Nurses and other employees working in research laboratories, housekeeping maintenance or other support services may handle potentially infectious blood, tissue or body fluids and are required to follow universal precautions. It is imperative that employee take precautions to protect his or her safety and health of their coworker (TSRI Safety Manual, 2000).

It is from the foregoing statements that the researchers undertook this study, It ventures to determine whether nurses are concern about universal/standard precautions as a measure to control infections and to assess whether they follow these precautions in their daily duties in the hospital. The study further examined possible reasons that lead to lapses in the use of universal/standard precautions.

Results of this study would serve as a basis or guide for nurses, especially the newly hires and even student affiliates on the importance of complying with the precautions to protect not only to patients but also themselves as providers of care. This study will also intend to awaken nurses' awareness on the risks involved in non-compliance with the standard precautions.

Moreover, it hopes to assist or remind hospitals to increase educational and motivational programs regarding universal/standard precautions, come up with policies on a more strict observation for compliance, implement routine monitoring and potential penalties for participants who do not comply will be necessary to bring compliance rate to acceptable level.

Objectives

This study aimed to assess the level of compliance with the standard precautions in terms of handwashing/ hand hygiene, use of personal protective equipment, handling and discarding of sharps, and other protective practices among nurses in government hospitals of Ilocos Sur during the Calendar Year 2016. It also looked on the socio-demographic and health-related profile of the respondents. The significant relationship between the respondents' level of compliance to the standard precautions and the socio-demographic and hospital-related profile factors was also determined.

Research Methodology

The respondents were the 45 nurses currently employed in the selected government hospitals in Ilocos Sur namely Ilocos Sur Provincial Hospital – Gabriela SIlang, Ilocos Sur District Hospital – Magsingal, Ilocos Sur District Hospital – Sinait, Ilocos Sur District Hospital – Narvacan, Ilocos Sur District Hospital – Sta. Lucia.

The descriptive-correlational research design was employed. A questionnaire-checklist adopted from the study of Dizon (2004) was utilized. The data were treated and interpreted using frequency, percentage, mean, and Simple Linear Correlation Analysis.

Results and Discussion

1. Profile of the Respondents

Table 2. Socio-Demographic and Health-Related Profile of the Respondents

A. Socio-Demographic Factors	f	%
Age		
56 years old and above	5	11.11
51-55	3	6.67
46-50	3	6.67
41-45	1	2.22
36-40	3	6.67
31-35	3	6.67
26-30	14	31.11
25 years old and below	13	28.88
Total	45	100
Sex		
Female	27	60.0
Male	18	40.0
Total	45	100
Civil Status		
Single	23	51.1
Married	22	48.9
Total	45	100
Employment Status		
Contractual	21	46.7
Temporary	1	2.2
Permanent	23	51.1
Total	45	100
Position/Designation		
Staff Nurse	25	53.3
Senior/Head Nurse	7	15.6
Supervisor	1	2.2
Chief Nurse	1	2.2
No Response	12	26.7
Total	45	100
Length of Service		
31 years and above	31	6.66
26-30 years	4	8.9
21-25 years	1	2.22
16-20 years	1	2.22

11-15 years	4	8.9
6-10 years	3	6.66
5 years and below	29	64.44
Total	45	100
No. of Seminars/Training Attended Related to Infection Control		
10	1	57.8
5	1	2.2
3	2	2.2
2	5	4.4
1	10	11.1
No Training/Seminars Attended	26	57.8
Total	45	100
B. Hospital-Related Factors		
Area of Assignments		
OPD	7	15.6
ER	9	20.0
Ward	23	51.1
DR	2	4.4
OR	2	4.4
All Areas	2	4.4
Total	45	100
Type of Hospital		
Primary	22	48.9
Secondary	22	48.9
Tertiary	1	2.2
Total	45	100
Nurse – Patient Ratio		
1:3	1	2.2
1:4	3	6.7
1:5	29	64.5
1:20	12	26.6
Total	45	100

A. On Socio-Demographic Profile

On Age. The greater number of the respondents (14 or 31.11%) belongs to 26-30 age bracket while the least (1 or 2.22%) belong to 41-45 age bracket.

On Sex. Majority of the respondents (27 or 60%) are females while 18 (40%) are males.

On Civil Status. More than half of the respondents (23 or 51.1%) are single and 21 (48.9%) are married.

On Employment Status. Majority of the respondents (23 or 51.1%) are permanent and 21 (46.7%) are contractual.

On Position/Designation. Majority of the respondents 25 (53.3%) are Staff Nurses while the least (1 or 2.22%) is a Chief Nurse and a Nurse Supervisor, respectively.

On Length of Service. The majority of the respondents (29 or 64.445) had been employed for 5 years and below, while one (2.22%) each had been employed for 21-25 years and 16-20, respectively.

On Number of Seminars/Training Attended Related to Infection Control. Majority of the respondents (26 or 57.8%) has not attended seminars/training related to infection control; 10 (22.2%) have attended once; and one (2.22%) each for 10 and five times.

B. On Hospital-Related Profile

On Are of Assignment. Majority of the respondents (23 or 51.1%) are assigned in the ward, while two (4.4%) each in the delivery room, operating room and in all hospital areas.

On Type of Hospital. A great percentage of the respondents (22 or 48.9%) are employed in primary and secondary hospitals respectively, while one (2.2%) work in a tertiary hospital.

On Nurse – Patient Ratio. Majority of the respondents (29 or 64.5%) handle five patients in a shift (1:5), while one (2.2%) takes care of three patients (1:3).

2. **Level of Compliance with the Standard Precaution Observed and Practiced by the Respondents**

The level of compliance with standard precautions observed and practiced by the respondents is measured in terms of handwashing/hand hygiene, use of personal protective equipment, handling and discarding of sharps and other protective practices.

On Handwashing/Hand Hygiene

Table 3. Level of Compliance to the Standard Precautions Observed and Practiced by the Respondents along Handwashing/Hand Hygiene

Items	Mean	DR
1. I wash my hands before I start my duty.	4.25	Always
2. I was my hands after picking up anything from the floor.	4.10	Often
3. I wash my hands before and after caring for each patient.	4.50	Always
4. I wash my hands before and after performing invasive procedures.	4.25	Always
5. I wash my hands after contact with any equipment or environmental surface that might be soiled or contaminated.	4.81	Always
6. I wash my hands before and after immediately after contact with non-intact skin, mucous membranes, blood or any moist body fluid, secretions, or excretions, even if gloves were worn during the contact.	4.83	Always
7. I wash my hands before applying and after removing any personal protective equipment (PPE).	4.67	Always
8. I wash my hands anytime my gloves become torn.	4.79	Always
9. I wash my hands as soon as possible after using waterless or antiseptic hand cleansers or moist towelettes.	4.67	Always
10. I wash my hands before and after going on break.	4.81	Always
11. I wash my hands at the end of my shift before leaving the facility.	4.76	Always
Overall	4.58	Very High

Legend:

Range of Scores	Description	Interpretation
4.21-5.00	Always	Very High
3.41-4.20	Often	High
2.21-3.40	Sometimes	Fair
1.81-2.20	Rarely	Low
1.00-1.80	Never	Very Low

The overall level of compliance to the standard precautions among the respondents along handwashing/hand hygiene is "Very High" (x=3.76). The respondents claimed that they wash hands before and after immediately after contact with non-intact skin, mucous membranes, blood or any moist body fluid, secretions, or excretions, even if gloves were worn during the contact (x=4.83). The respondents also often wash hands after picking up anything from the floor (x=4.10).

Hand hygiene is required regardless of whether gloves are used or changed. Failure to remove gloves after patient contact or between "dirty" and "clean" body-site care on the same patient must be regarded as non-adherence to hand hygiene recommendations.

On Use of Personal Protective Equipment

Table 4. Level of Compliance to the Standard Precautions Observed and Practices by the Respondents along Use of Personal Protective Equipment

Items	Mean	DR
1. I wear clean, non-sterile gloves when touching blood, body fluids, secretions, excretions, mucous membranes and non-intact skin.	4.79	Always
2. I change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms.	4.86	Always
3. I wear gloves when I have cuts, scratches or other breaks in my skin before handling contaminated materials.	4.60	Always
4. I do not wash or attempt to disinfect surgical or examination gloves for reuse.	4.21	Always
5. I use hypoallergenic gloves when I am allergic to standard gloves.	4.17	Often
6. I use general purpose gloves (e.g. rubber household gloves) for housekeeping chores involving potential blood contact.	4.24	Always
7. I use general purpose gloves (e.g. rubber household gloves) for instrument cleaning and decontamination procedures.	4.53	Always
8. I remove gloves promptly and clean my hands immediately after use.	4.80	Always
9. I wear mask and eye protection to protect mucous membranes of the eyes, nose and mouth during procedures.	3.51	Always
10. I wear mask and eye protection during patient care activities that are likely to generate splashes or sprays of blood, body fluids, excretions and secretions.	4.42	Always
11. I wear clean, non-sterile fluid-resistant gown to protect skin and to prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, excretions and secretions.	3.86	Often
12. I select a gown that is appropriate for the activity and amount of	4.02	Often

fluid to be encountered.		
13. I remove soiled gown as promptly as possible and wash my hands immediately after use.	4.49	Always
14. I wear disposable impervious shoes covering where there is massive blood contamination on floors and wear gloves to remove them.	3.93	Often
15. I remove PPE and clothing when it becomes contaminated and before leaving the work area.	4.60	Always
16. I place used PPE and clothing in a designated container for storage, decontamination or disposal.	4.60	Always
Overall	4.35	Very High

As a whole, the respondents have a "Very High" level of compliance to the standard precautions along Personal Protective Equipment (PPE) (x=4.35). The respondents "always" change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms (x=4.86). However, They "often" wear clean, non-sterile fluid-resistant gown to protect skin and to prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, excretions and secretions (x=3.86).

This indicates that the respondents are following the standards of maintaining precautions by using PPEs. Using PPEs is important because it protects the nurses who are rendering bedside care it can also prevent the spread of infection from one patient to another.

On Handling and Discarding of Sharps

Table 5. Level of Compliance to the Standard Precautions Observed and Practices by the Respondents along Handling and Discarding of Sharps

Items	Mean	DR
1. I do not break contaminated needles.	4.10	Often
2. I recap a contaminated needle only when no alternative is reasonable for the medical procedure.	3.60	Often
3. I recap contaminated needle only when in administering incremental doses of medication to the same patient, such as in ICU or while administering anesthetics.	3.72	Often
4. I recap contaminated needle only when no alternative is reasonable in any anticipate situation.	3.63	Often
5. I recap needle using a non-handed recapping method or forceps in safe manner.	3.84	Often
6. Should an accidental needle puncture occur, I immediately report to the employee health nurse, nurse manager or supervisor.	3.41	Often
7. I recap contaminated needles if it is the only means for providing safe transport to the needle disposal container.	3.41	Often
8. Immediately after use, I place reusable sharps in a color-coded container for decontamination.	4.29	Always
9. I discard needle/syringe sharps in color-coded container.	3.95	Often
10. I do not place sharps container into bag of any kind.	4.47	Always
11. I do not overfill sharps container. It is tightly closed and upright	4.07	Often

in the regulated trash area when container is ¾ full.		
12. I burn used needles immediately after use.	2.85	Sometimes
Overall	3.78	High

The respondents' level of compliance to the standard precautions along handling and discarding of sharps is "High" as manifested by the overall mean rating of 3.78. The respondents "always" do not place sharps container into bag of any kind (x=4.47) and place reusable sharps in a color-coded container for decontamination immediately after use (x=4.29).

Moreover, on this aspect of standard precaution, the respondents "sometimes" burn used needles immediately after use (x=2.85).

On Other Protective Practices

Table 6. Level of Compliance to the Standard Precautions among the Respondents along Other Protective Practices

Items	Mean	DR
1. I wash with soap and water when my skin or mucous comes into contact with blood and other body fluids.	4.56	Always
2. I flush my eyes with water when they come in contact with blood and other body fluids.	4.72	Always
3. I handle soiled linen carefully.	4.21	Always
4. I place soiled linen in leakage-resistant bags at the location where it is used.	4.67	Always
5. I put all specimens of blood and listed body fluids ion well-constructed containers with secure lids to prevent leakage during transport.	4.57	Always
6. I avoid contaminating the outside of the container when collecting specimens.	4.35	Always
7. I use a chemical germicide that is approved for use as a hospital disinfectant to decontaminate work surfaces after there is a spill of blood or other applicable body fluids.	4.35	Always
8. In the absence of a commercial germicide, I use a solution of sodium hypochloride (household bleach) for decontamination.	4.40	Always
9. I make sure plastic bags are available to remove contaminated items from spill sites.	3.82	Often
10. I carefully pour bulk blood, suctioned fluids, and secretions, down drains (that are connected to a sanitary sewer).	4.47	Always
Overall	4.41	Very High

As a whole, the overall level of compliance to the standard precautions among the respondents along other protective practices is "Very High" as backed up by the overall mean rating of 4.41.

It can be noted that the respondents "always" flush their eyes with water when they come in contact with blood and other body fluids (x=4.72) and place soiled linen in leakage-resistant bags at the location where it is used (x=4.67).

However, the respondents demonstrated that they "often" make sure plastic bags are available to remove contaminated items from spill sites (x=3.82).

Table 7. Summary of the Level of Compliance to the Standard Precautions Observed and Practiced by the Respondents

Items	Mean	DR
1. Handwashing/Hand Hygiene	4.58	Very High
2. Use of Personal Protective Equipment (PPE)	4.35	Very High
3. Handling and Discarding of Sharps	3.78	High
4. Other Protective Practices	4.41	Very High
Overall	4.28	Very High

Generally, the respondents observed and practices "Very High" level of compliance to the standard precautions (x=.4.28). They have "very High" compliance on handwashing/hand hygiene (x=4.59), use of personal protective equipment (x=4.35), and other protective practices (x=4.41). However, on handling and discarding of sharps, the respondents' compliance level is "high" (x=3.78).

3. Relationship Between the Respondent's Level of Compliance with standard Precaution and their Socio-Demographic and Hospital-Related Profile

Table 10. Correlation Coefficient Showing the Significant Relationship Between the Respondents' Level of Compliance to Standard Precautions and their Socio-Demographic Factors and Hospital-Related Factors

Variables	Handwashing / Hand Hygiene	Use of PPE	Handling and Discarding of Sharps	Other Protective Practices	Overall
Socio-Demographic Factors					
Age	0.63	-.038	-.079	-.154	-.064
Sex	-.177	-.114	-.069	-.165	-.164
Civil Status	.294	.044	-.122	.029	.043
Employment Status	.196	-.059	-.013	-.018	.050
Position/ Designation	.023	-.195	-.095	-.132	-.167
Length of Service	.203	-.057	-.095	.104	-.060
No. of seminars/ Trainings Attended	-.540*	-.544**	-.092	-.393	-.410
Hospital Related Factors					
Area of Assignment	.027	.189	.109	.164	.175
Type of Hospital	-.439**	-.327*	.324*	-.108	-.007
Nurse-Patient Ratio	.444**	.199	-.503**	-.133	-.184

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-taied)

It can be observed that there is no significant correlation between the respondents' level of compliance to standard precautions and their socio-demographic and hospital-related factors.

On Handwashing/Hand Hygiene. It is gleaned on the table that among the socio-demographic factors of the respondents in the selected district hospitals, the number of seminars/trainings attended related to infection control showed an inverse correlation with handwashing/hand hygiene (r=-.540). This suggests that the greater the number of seminars/training attended by the nurses, the lower the compliance to handwashing/hand hygiene. This contradicts the findings of Dizon (2009) that age, civil status and length of service were significantly related with the level of compliance with standard precautions along handwashing and hand hygiene. The negative correlation could be due to the reason that majority or more than half (26 or 57.8%) of the respondents had no seminars/training on infection control and 29 (64.24%) are still new in the service. The finding suggests the theories they learned in their bachelor's degree is not yet enough however, that the respondents are still curious and reminded on the standard precautions while having their duties in the hospitals.

The other socio-demographic factors of the respondents failed to attain significant correlations with the level of compliance with standard precautions. When it comes to hospital-related profile, the type of hospital (r=-.439) is highly and significantly associated with handwashing/ hand hygiene at .01 probability level. It can be recalled that he greatest bulk of the hospitals are categorized as primary and secondary. This tends to imply that these hospitals are more strict to their nurses in complying these provisions.

Further, the table also reveal that nurse-patient ration (r=.444) also shows a high significant correlation with handwashing/ hand hygiene at .01 probability level. Since majority of them assist at least five (5) patients, it is then imperative for them to maintain cleanliness and proper hygiene.

On Use of Personal Protective Equipment. The table reveals that there is a significant correlation between the respondents' attendance to seminars/training related to infection control and the use of personal protective equipment (r=-.548). This findings explains that the theories they learned from the lectures and other demonstration concepts during their in-service trainings/seminars greatly helped them become more sensitive to these aspects. Considering the infections caused by many diseases in the hospital brought about by the fast turnover of patients, nurses have also learned to protect themselves free from any contamination.

The type of hospital is also significantly correlated with the use of Personal Protective Equipment (r=-.327). This then tend to imply that there type of hospitals are more strict in complying these provisions.

On Handling and Discarding of Sharps. It is displayed on the table that the hospital-related profiles such as type of hospital (r=.324) and nurse-patient ration (r=.-.503) show a significant correlation with handling and discarding of sharps. The findings reveals the strict observance and practice of the nurses especially in the proper disposal and decontamination of needles for it is their mission of making their patients recover fast. They to want that all their patients to regain their health despite the number of patients they tale care everyday.

On Other Protective Practices. The table clearly shows that the socio-demographic factors such as age sex, civil status, status of appointment, position/delegation, length of service and number of seminars/trainings attended related to infection control; and hospital related profile such as area of assignment, type of hospital and nurse-patient ratio have no significant correlation with other

protective practices. The finding implies that the respondents complied strictly with the standard precautions.

Conclusions

Based of the findings of the study, the following conclusions were drawn: 1) The greater number of the respondents are in their middle age, female, single, permanent staff nurses, young in the service and no attendance to seminars/trainings. Most of the respondents are assigned to wards, employed in the primary and secondary hospitals and take care of five patients per shift. 2) In general, the overall level of compliance of the respondents to the standard precautions is "Very High". 3) As a whole, the socio-demographic factors and hospital-related profile of the respondents are not correlated significantly with the level of compliance with standard precaution.

Recommendations

Based on the conclusions drawn, the researchers forwarded the following recommendations to further improve the compliance to the standard precautions of nurses in government hospitals in Ilocos Sur.

1. The level of compliance to the standard precautions among nurses in selected hospitals in Ilocos Sur which is "Very High" should be maintained. However, their compliance to the handling and discarding of sharps should be improved through encouraging then nurses in attending training programs/seminars to enhance or update themselves on the new policies regarding standard precautions.
2. The Department of Health and/or the government should allocate funds for the conduct of training programs/seminars, for and the like for the nurses or encouraging the nurses to attend trainings/seminars for their professional development.
3. The administrators of the government hospitals should conduct religious monitoring of the standard precautions.
4. Further study should be conducted in a wider scope considering other variables.

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