THE RELATIONSHIP BETWEEN KNOWLEDGEAND COMPLIANCE OF STANDARD PRECAUTIONS AMONG SENIOR NURSINGSTUDENTS

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ABSTRACT

The study aims to assess the level of knowledge, degree of compliance with standard precautions and study the relationship between knowledge and compliance with standard precautions ofnursing studentsin private university, Thailand. The sample of 80 nursing students were selected by simple random sampling. Data were collected by using the questionnairesabout knowledge and compliance of standard precautions. The knowledge and compliance of standard precautions questionnaires were used and developed by the researcher, the reliability were 0.73, 0.90. Data were analyzed by program for statistical values as descriptive and Pearson's correlation coefficient.The results showed that the level of nursing students knowledge about standard precautions asmoderate knowledge (64.63%). The degree of compliance with standard precautions of nursing students as very high compliance(Mean 3.7).Correlation results were significant between knowledge and compliance of standard precautions (r=0.192, p<0.05).

Keywords--Standard precautions, Knowledge, Compliance

INTRODUCTION

Infection is a major problemfor health caresystems in many countries[1]. Infections cause deaths,longer lengths of stay and a lot of money. According tothe U.S. Centers for Disease Control (CDC) more than2 million infections start every year in a hospital,nursing home or another healthcare setting, 70,000people die every year as the result of getting aninfection in a hospital, nursing home or anotherhealthcare setting, the United States spends more than $45 billion every year for the extra care and treatmentthat is needed when infections start in a hospital,nursing home or another healthcare setting[2].

Nosocomial infectionsare the most frequently reported adverse events in health caresetting[3]. As the incidence of nosocomial infection has increased globally,[4] more than 1.4 million people worldwide acquire infectious complications in hospitals annually[5].Health workers are exposed to occupational hazards such as filovirusinfection on a daily basis while performing their duties [6]. Nurse is the part of health worker so they can be exposed to various infections during their nursing activities. Nursing students are also at risk of such infections and injuries due to accidental contamination during their practical occupational exposure.However, exposure to infectious material can be minimized by standard precautions which are designed to reduce the risk of acquiring occupational infection from both known and unexpected sources in the healthcare setting[7].They are the basic level of infection control precautions which are to be used, as a minimum, in the care of all patients [8].Standard precautions include : hand hygiene, use of personal protective equipment (e.g., gloves, gowns, masks), safe injection practices, safe handling of potentially contaminated equipment or surfaces in the patient environment, and respiratory hygiene/cough etiquette[8,,9].

Several studies indicated that better knowledge of standard precautions among health care workers was one of the predictors of better compliance[12,,13].Despite the standard precaution guidelines were developed but compliance with aseptic precautions is known to be "poor and lacking"[10,,11].In Thailand, it was reported the practice of standard precaution in nursing students such as hand washing before contact patient (45%),hand washing after contact patient (53%), wearing gloves (70%), recapped needle after use by two hands (30%) [14] that there was a poor of compliance of standard precaution.

In private university teachings of nursingprogram, standard precaution is a 3 hour curriculum module designedfor the bachelor nursing students as a part offundamental nursing course and clinically appliedthroughout their clinical education and emphasized as apart of their evaluation under subjects of patient safety.This practice standard precautionis evidence-based and outlinespractice expectations for all nurses in all roles andpractice settings. Studies on standard precautions are increasing over the world. However, there is limited number of studies thathave been performed to assess nursing students'knowledge and compliance with

standard precautions. Thus, the present study was conducted to assessknowledgeandcompliance with standardprecautions in nursing students.

OBJECTIVE

The aims of this study is to assess the level of knowledge, degree of compliance with standard precautions and study the relationship between knowledge and compliance regarding standard precautions ofnursingstudent at oneprivate university, Thailand

METHODOLOGY

Sample

This study was a descriptive correlational research designwhich was performed from 10th to 17th November 2016 to assess and study the relationship between knowledge and compliance regarding standard precautions. The sample is senior student nurses atoneprivate university in Prathumtani, Thailand . Eightysenior student nurses participated in this study selected by simple random sampling

Instrument

The instrument of study was asked about knowledge of standard precautions and compliance of standard precautions..

Knowledge of standard precautions :The questionnairewasdeveloped by researcher. The questions were based on the basic concepts, content, and activity requirements of the standard precautions.The questionnaire was further reviewed by experts in infection control to ensure quality and content validity. There wasvalidated for its reliability resulting in a statistical value of 0.73. (Kuder-Richardson-21) There have 18 items of closed ended questions in multiple choice, with possible responses of True or False. 'True' is given a value of 1 point, and 'false' with 0 points. Criteria for interpretation as follows; 87.50 – 100 as "Very Good Knowledge", 75.00 – 87.49 as "Good Knowledge", 62.50 – 74.99 as "Moderate Knowledge", 50.00 – 62.49 as "Fair Knowledge", and below 49.99 as "Poor Knowledge".

Compliance with standard precautions :The questionnaire wasdeveloped by researcher and reviewed by experts in infection control to ensure quality and content validity. The compliance questionnaire was validated for its reliability resulting in statistical value of 0.90 (Cronbach's alpha).The questionnairehascovered the 9 domains of standard precautions including Hand hygiene, Wearing gloves, Face protection (mask / goggle/face shields), Wearing gown, Patient care equipment, Environment control, Textiles and laundry, Safe work practice to prevent health care worker exposure to blood-borne pathogen and Patient placement[9].There are 32 compliance items with a scale of 1–4 points: 1 = seldom, 2 = sometimes, 3 = usually, and 4 = always. In determining the level of compliance, the following scaling was used; for Very High Compliance = 3.50 – 4.00, High Compliance = 2.50 – 3.49, Average Compliance = 1.50 – 2.49and Low Compliance = 1.00 – 1.49.

Data collection

- Administration acceptance was obtained from theVice Dean of faculty of a private university to collect the data.
- The researcher instructionedto senior student nurses the purpose of study. Confidentiality and anonymity of the sample were maintained by only a code number on the questionnaire.
- .Data collection took approximately one week.
- The duration spent by nursing students on answering the questionnaire and self-reported practice of standard precautions range from 20-30 minutes

Data Analysis

The data from the questionnaire was coded and entered into a computerized data base and analyzed frequencies, percentages, Means and Standard Deviation were used for analyzing the selected demographic data of student nurses, assessing level of knowledge and degree of compliance with standard precautions. Pearson's correlation coefficient was utilized to test the relationship between the knowledge and compliance of standard precautions. A p-value of equal to or less than 0.05 was considered statistically significant.

RESULTS

The results of the present study are categorized as follows:

Table 1
Descriptive Sample Demographics

Sample Demographics	n	Percentages (%)
Gender		
Male	6	7.5
Female	74	92.5
Total	80	100
AGE		
20-22	72	90
23-27	8	10
Total	80	100

There were 6 (7.5%) male and 74 (92.5%) female participants. Majority of the participants 72 (90%) were within the age bracket of 20 to 22 years old.

Table 2
Percentages of nursing students knowledgeabout standard precautions

Knowledge of standard precautions	Correct answer	
	n	Percentages (%)
1. Nosocomial infections are Infection that occurred at 48 hours after hospital admission.	47	58.8
2. The most common cause of transmission in hospital is contact transmission.	51	63.8
3. Standard precautions are a set of infection control practices used to prevent transmission of diseases that can be acquired by contact with blood, body fluids, elimination and mucous membranes.	37	46.2
4. Hygienic hand wash is recommended after dressing woundof MRSA infected.	10	12.5
5. Correct hand washing before and aftercare patientto prevent transmission of agent.	74	92.5
6. Hygienic hand wash is recommended for after dressing wound has pus.	31	38.8
7. Wearing gloves is not a substitute for hand washing in patient care.	76	95.0
8. It is necessary to wash hands before using gloves.	75	98.3
9. Using gloves to care for patients of diarrhea.	35	43.8
10. Wearing goggles and mask when you suture wound.	50	62.5
11. Usingsurgical mask when you transport case of TB.	42	52.5
12. Patient's rooms should be cleaned with detergent.	20	25.0
13. Used needles should not be recapped after use to prevent infection	71	88.8
14. Separate contaminated blood cloth from clean cloth before delivered to cleaning.	57	71.2
15. At ward after we use the devices, the devices should be rinsed with water and delivered to supply for sterilization.	41	51.2
16. While cleaning devices you should wear protective personal equipment at all times.	70	87.5
17. Fabrics used in patients should not be placed on the floor.	64	80.0
18. Personal who carried waste should wear mask, heavy gloves, cap, apron and boots.	76	95.0
Total		64.63

This table shows the correct answers about the knowledge of participants on standard precautions. The total percentagesof nursing students knowledge was64.63% which is interpreted as moderate knowledge.Mostof nursing students 98.3% answered correctly that it is necessary to wash hands before using gloves and only 12.5% of nursing students answered correctly that hygienic hand wash is recommended for after dressing wound of MRSA infected.

Table 3
Means, Standard Deviation of compliance with standard precautions of nursing students

Compliance with standard precautions	Means	SD
Hand hygiene	3.68	3.22
Wearing gloves	3.83	2.07
Face protection (mask / goggle/face shields)	3.51	0.42
Wearing gown	3.66	0.41
Patient care equipment	3.57	0.57
Environment control	3.92	0.22
Textiles and laundry	3.89	0.27
Safe work practice to prevent health care worker	3.75	0.29
Exposure to blood-borne pathogen a		
Patient placement	3.47	0.54
Total	3.70	0.24

This table shows the compliancewith standard precautions. The overall means were 3.70 which is interpreted as "Very High Compliance".Analyze by domains found that environment control has the degree of compliance with mean of 3.92 which is interpreted as "Very High Compliance". On the other hand, patient placement has the lowest degree of compliance with means of 3.47 which is interpreted as "High Compliance".

Table 4
Show the relationship between Knowledge and Compliance ofStandard Precautions.

Variables	r-value	p-value
Knowledge and Compliance of Standard Precautions	0.192	0.049

Significance level, a = 0.05; two-tailed

This table shows the relationship between knowledge and compliance of standard precautions. As seen gleaned on the table, the relationship between knowledge and compliance of standard precautions posted r-value of 0.192with a computed p-value of 0.049 which was lesser than the level of $\alpha = 0.05$.

DISCUSSION

In the present study the overall percentages score of nursing studentsfor knowledge was 64.63% which is interpreted as moderate knowledge. Similar studies that shows the result with Petrit. et al. reported that percentage score of nursing student had knowledge 60.6% [15] and Vaz et al. reported that 90.0% of nurses had knowledge of standard precautions [16].Several studies indicated that better knowledge of standard precautions among health care workers was one of the predictors of better compliance[12,13].This reinforces the need to intensify and strengthen teachings regarding standard precaution in classrooms and in hospital where student nurses practice.

Result of the present study indicated that compliance with standard precautions, findings revealed that students had very high compliance (means=3.70). This may be due to stringent monitoring done by the faculty relative to standard precaution practices during clinical training. Furthermore, the teachersmonitored and followed up closely their student during the performance of standard precaution practices

Present study express that the level of knowledge was significantly correlated with compliance of standard precautions (r= 0.192, p<0.05) This result is supported by other authors. In the study conducted by Kim et al. it was revealed that knowledge is correlated to performance of standard precautions.[17] This result firmly suggests that standard precautions knowledge was positively correlated with compliance, confirming that good standard precautions knowledge the better the activity compliance [12,13].

CONCLUSION

The overall knowledge percentages for nursing students toward standard precautions was moderate knowledge. The overall means of compliance with standard precautions was very high compliance. There was significant relation betweenstudents' knowledge score and compliance with standard precautions. However, teaching must be strengthened, curricular reform and training are required to fulfill students' knowledge deficiencies related to standard precautions.Furthermore, nurse educators may need to provide an environment that models and promotes standard precaution practices by positive role modeling. Feather et al. reported that the teachers were important in modeling good clinical practices [18].

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