

## CHAPTER 4

### FINDINGS AND DISCUSSION

This study aims to identify the knowledge and attitudes toward AIDS and universal precautions practices of nurses at PUMC hospital and to examine the relationships among these variables. A descriptive correlational design was used in this study. Data were collected with a questionnaire modified by the researcher based on the questionnaire developed by Senaratana, Leksawasdi and Nantasupawat (1996). Three hundred and ninety nurses at PUMC hospital completed questionnaires yielding a respondent of 90.7%. The findings of this study are presented into five parts:

Part one: The demographic data of the subjects

Part two: The knowledge toward AIDS of nurses at PUMC hospital

Part three: The attitudes toward AIDS of nurses at PUMC hospital

Part four: The universal precautions practices of nurses at PUMC hospital

Part five: The relationships among knowledge and attitudes toward AIDS and universal precautions practices of nurses at PUMC hospital

**Part one: Description of demographic data of the subjects**

Three hundred and ninety nurses were surveyed for the study. The demographic data of the subjects are presented in table 1-3.

**Table 1** Frequencies and percentages of the subjects' demographic characteristics divided into age, marital status and educational level (n=390)

Demographic Characteristics	Frequency	Percentage (%)
<b>Age (yrs)</b>		
< 20	12	3.1
20-29	258	66.1
30-39	77	19.8
40-49	36	9.2
> 49	7	1.8
<b>Marital Status</b>		
Single	160	41.0
Married	224	57.4
Separated	2	0.5
Divorced	3	0.8
Widowed	1	0.3
<b>Educational level</b>		
Diploma	322	82.6
ADN	68	17.4

Table 1 shows the data of age of the nurses in this study. The majority of the subjects (66.1%) were 20 to 29 years old. Twelve nurses (3.1%) were younger than 20 years old. The marital status of subjects also was shown in table 1. The majority of subjects (57.4%) were married and one hundred and sixty subjects (41%) were single. Six nurses were separated, divorced or widowed. From the data shown in table 1, three hundred and twenty-two subjects (82.6%) were diploma nurses. The other sixty-eight subjects were nurses with associated degree of nursing science.

**Table 2** Frequencies, percentages of the subjects' demographic characteristics divided into years of working, area of nursing practice and present position (n=390)

Demographic Characteristics	Frequency	Percentage (%)
<b>Years of working (yrs)</b>		
< 1	40	10.3
1-5	136	34.8
6-10	111	28.5
11-15	43	11.0
16-20	26	6.7
>20	34	8.7
<b>Area of nursing practice</b>		
Medical department	111	28.5
Surgical department	96	24.6
Pediatric department	34	8.7
OB&GYN department	45	11.5
Emergency department	23	5.9
ICU-department	23	5.9
Foreign patient department	44	11.3
Outpatient department	14	3.6
<b>Present position</b>		
Staff nurse	356	91.3
Head nurse	34	8.7

Table 2 shows the majority of subjects (34.8%) have one to five years of working experience. There were 111 subjects (28.5%) who have worked for six to ten years. Forty subjects who have worked for less than one year. There was one hundred and three subjects have worked for more than ten years. Among the subjects, one hundred and eleven nurses (28.5%) worked in the medical department, and 96 subjects (24.6%) were in the surgical department. The subjects working in pediatric and OB & GYN department were 34 (8.7%), 45 (11.5%) respectively. The subjects in the emergency department were 23 (5.9%) which was the same as those in the ICU department. There were 44 subjects (11.3%) working in foreign patient department. And 14 nurses (3.6%) belong to the outpatient department. Of the 390 respondents, three hundred and fifty-six (91.3%) were staff nurses and 34 subjects (8.7%) were head nurses.

Table 3 Frequencies, percentages of the subjects' demographic characteristics divided into attending training of AIDS, experience of caring for AIDS patients, attending training of universal precautions, using Ups is essential and problem in implementing UPs (n=390)

Demographic Characteristics	Frequency	Percentage (%)
<b>Attended training of AIDS</b>		
Yes	173	44.4
No	217	55.6
<b>Experience of caring for AIDS patient</b>		
Yes	62	15.9
No	328	84.1
<b>Attended training of universal precautions</b>		
Yes	41	10.5
No	349	89.5
<b>Using UPs is essential</b>		
Yes	309	79.2
No	81	20.8
<b>Problem in implementing UPs</b>		
Yes	157	40.3
No	210	53.8
No answer	23	5.9

Table 3 shows that 173 subjects (44.4%) have attended training of AIDS, other 217 nurses (55.6%) reported that they did not attend any training of AIDS. And 349 (89.5%) reported having no training about universal precautions. Only 62 nurses (15.9%) had ever taken care of AIDS patients. Three hundred and nine subjects (79.2%) thought it was essential to use universal precautions in clinical nursing. There were 157 subjects (40.3%) reported that they had problems in implementing universal precautions in nursing practices.

**Part two: Description of the knowledge toward AIDS of the subjects**

Using descriptive statistics, mean, standard deviation, frequency and percentage were calculated for the knowledge scores. The data of the knowledge toward AIDS is presented in table 4 to table 7.

**Table 4 Mean, standard deviation, range and level of knowledge toward AIDS of the subjects (n=390)**

Variables	Range	Mean	SD	Level
Knowledge toward AIDS	4 - 21	13.5	2.96	fair

Table 4 showed that the total scores of knowledge toward AIDS of subjects ranged from 4 to 21. The total mean score of the knowledge was 13.5 with the SD of 2.96. So the knowledge toward AIDS of the subjects was identified at fair level.

Table 5 Mean, standard deviation, and level of knowledge toward AIDS of the subjects divided into diploma nurses and associate degree nurses

Variables	Knowledge toward AIDS		Level
	Mean	SD	
Diploma nurses (n=322)	13.4	2.99	fair
AND (n= 68)	14.0	2.75	fair

Table 5 showed that the mean score of the knowledge toward AIDS of diploma nurses was 13.4 with the SD of 2.99, and the mean score of the associate degree nurses was 14.0 with the SD of 2.75. The knowledge toward AIDS of these two group nurses were all at the fair level.

**Table 6 Mean and standard deviation of each aspect of knowledge toward AIDS of the subjects (n=390)**

Knowledge Toward AIDS	Number of items	Mean	SD
HIV transmission	2	0.96	0.26
AIDS definition	1	0.94	0.24
AIDS causal agent	3	0.75	0.76
Epidemiology	2	0.71	0.71
Universal precautions	7	0.57	1.58
Treatment	2	0.53	0.77
Testing	3	0.48	0.98
Manifestation	2	0.47	0.76

Table 6 showed the number of items, mean and standard deviation of each aspect of knowledge of the subjects. The knowledge about HIV transmission gained the highest mean score of 0.96. The lowest mean of 0.47 presented for the aspect of knowledge regarding manifestation of HIV infection.

Table 7 Mean and standard deviation of each aspect of knowledge toward AIDS of the subjects divided into diploma nurses and associate degree nurses

Knowledge Toward AIDS	Diploma Nurses		Associate Degree Nurses	
	Mean	SD	Mean	SD
HIV transmission	0.96	0.27	0.98	0.21
AIDS definition	0.94	0.23	0.91	0.29
AIDS causal agent	0.74	0.71	0.80	0.70
Epidemiology	0.70	0.66	0.71	0.63
Universal- Precautions	0.55	1.63	0.62	1.26
Treatment	0.53	0.79	0.56	0.68
Testing	0.48	0.99	0.48	0.95
Manifestation	0.48	0.75	0.44	0.86

Table 7 showed the mean scores of each aspect of knowledge of the diploma nurses and associate degree nurses. The highest mean score was 0.96 in diploma nurses and 0.98 in associate degree nurses which presented for the knowledge of HIV transmission. The lowest mean score was 0.48 in diploma nurses and 0.44 in associate degree nurses which presented for the knowledge of manifestation of HIV infection.

**Part three: Description of the attitudes toward AIDS of the subjects**

Using descriptive statistic, mean, standard deviation, frequency and percentage were calculated for the attitudes scores. The results are presented in table 8 to table 9.

**Table 8 Mean, standard deviation, range and level of attitudes toward AIDS of the subjects (n=390)**

variables	Range	Mean	SD	Level
Attitudes Toward AIDS	14 - 50	34.1	5.75	poor

Table 8 showed that the scores of attitudes toward AIDS of subjects ranged from 14 to 50. The total mean score of the attitudes was 34.1 with the SD of 5.75. The attitudes toward AIDS was scored at poor level.

Table 9 Mean and standard deviation of attitudes toward AIDS of the subjects divided into diploma nurses and associate degree nurses (n=390)

variables	Attitudes Toward AIDS		
	Mean	SD	Level
Diploma nurses	34.1	5.47	poor
ADN	33.9	6.98	poor

Table 9 showed that the mean score of the attitudes toward AIDS of diploma nurses was 34.1 with the SD of 5.47, and the mean score of the associate degree nurses was 33.9 with the SD of 6.98. The attitudes toward AIDS of these two group nurses were all at the poor level.

**Part four: Description of universal precautions practices of the subjects**

Using descriptive statistic, mean, standard deviation, frequency and percentage were calculated for the universal precautions practices scores. The results are presented in table 10 to table 13.

**Table 10 Mean, standard deviation, range and level of universal precautions practices of the subjects (n=390)**

variables	Range	Mean	SD	Level
Universal precautions practices	26 - 75	56.19	10.10	fair

Table 10 showed that the scores of universal precautions practices of the subjects ranged from 26 to 75. The total mean score of universal precautions practices was 56.19 with the SD of 10.10. The universal precautions practices of the subjects were scored at fair level.

Table 11 Mean and standard deviation of universal precautions practices of the subjects divided into diploma nurses and associate degree nurses

variables	Universal Precautions Practices		
	Mean	SD	Level
Diploma nurses (n=322)	56.78	9.8	good
ADN (n= 68)	53.43	10.9	fair

Table 11 showed that the mean score of universal precautions practices of diploma nurses was 56.78 with the SD of 9.8. The universal precautions practices of the diploma nurses was scored at good level. The mean score of associate degree nurses was 53.43 with the SD of 10.9. The universal precautions practices of the associate degree nurses was scored at fair level.

Table 12 Mean and standard deviation of each aspect of universal precautions practices of the subjects (n=390)

Universal precautions practices	Number of items	Mean	SD
Handwashing	5	2.87	1.15
Waste disposal	7	2.31	4.41
Injuries prevention	4	2.12	2.11
Using of protective barriers	9	1.99	5.96

Table 12 showed the number of items, mean and standard deviation of each aspect of universal precautions practices. The highest mean score of 2.87 presented for the practices of handwashing. The lowest mean score of 1.99 presented for the practices of using protective barriers.

Table 13 Mean and standard deviation of each aspect of universal precautions practices of the subjects divided into diploma nurses and associate degree nurses

Universal precautions practices	<u>Diploma Nurses</u>		<u>Associate Degree Nurses</u>	
	Mean	SD	Mean	SD
Handwashing	2.87	1.10	2.83	1.20
Waste disposal	2.35	3.56	2.15	4.34
Injuries prevention	2.13	2.11	2.07	2.08
Using protective barriers	1.94	5.76	1.77	6.75

Table 13 showed the mean and standard deviation of each aspect of universal precautions practices of the diploma nurses and associate degree nurses. The highest mean was 2.87 in diploma nurses and 2.83 in associate degree nurses which presented for the practices of handwashing. The lowest mean score was 1.94 in diploma nurses and 1.77 in associate degree nurses which presented for the practices of using protective barriers.

Part five: The relationships among the knowledge and attitudes toward AIDS and universal precautions practices of nurses at PUMC hospital

The relationships among knowledge and attitudes toward AIDS and universal precautions practices were examined by means of partial correlation. The results are presented from table 14 to table 16.

Table 14 Partial correlation coefficient between knowledge And attitudes toward AIDS when controlling universal precautions practices of the subjects (n=390)

Partial correlation coefficient	
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(control universal precautions practices)	
Variables	Attitudes toward AIDS
Knowledge toward AIDS	0.1165 *

\* P < 0.05

Table 14 shows that the knowledge was positively correlated with the attitudes toward AIDS when the influence from universal precautions practices was controlled ( $r = 0.1165$ ,  $p < 0.05$ ). The level of the correlation was low.

Table 15 Partial correlation coefficient between attitudes toward AIDS and universal precautions practices when controlling knowledge toward AIDS of the subjects (n=390)

Partial correlation coefficient ----- (control knowledge toward AIDS)	
Variables	Universal Precautions Practices
Attitudes toward AIDS	0.1318 *

\*  $p < 0.05$

Table 15 showed that attitudes toward AIDS of nurses was positively correlated with universal precautions practices when the influence from knowledge toward AIDS was controlled ( $r = 0.1318$ ,  $p < 0.05$ ). The level of the correlation was low.

Table 16 Partial correlation coefficient between knowledge toward AIDS and universal precautions practices when controlling attitudes toward AIDS of the subjects (n=390)

Partial correlation coefficient ----- (control attitudes toward AIDS)	
Variables	Universal Precautions Practices
Knowledge toward AIDS	0.0916
p > 0.05	

Table 16 showed that there was no statistical correlation between knowledge toward AIDS and universal precautions practices when the influence from attitudes toward AIDS was controlled ( $r = 0.0916$ ,  $p > 0.05$ ).

### Discussion

In this part, the researcher discussed the results of this study according to the objectives of this study.

#### Demographic data

There were 390 nurses at PUMC hospital who finished the questionnaires completely in this study yielding the respondent of 90.7%. The subjects' age ranged from 19 to 54 years. Two hundred and fifty eight nurses (66.1%) were between 20 to 29 years old. Two hundred and forty seven

subjects (63.3%) had 1 to 10 years of working experience. Three hundred and fifty six subjects (91.3%) were staff nurses. There were 111 subjects (28.5%) working in medical department and 96 nurses (24.6%) working in surgical department. Forty four subjects (11.3%) were nurses working in foreign patient department. There were 23 subjects (5.9%) in ICU department, which was the same as those in emergency department. Ninety three subjects (23.8%) were in pediatric, OB&GYN departments and the outpatient department. The majority of the subjects (82.6%) were diploma nurses. Only 68 subjects (17.4%) had an associated degree of nursing science and had received more advanced education in nursing than diploma nurses.

In the survey, only 62 nurses (15.9%) had experience of taking care of AIDS patients. Three hundred and twenty eight subjects (84.1%) had no experience of caring for AIDS patients. There were 173 subjects (44.4%) who had received training about AIDS and only 41 subjects (10.5%) had received training about universal precautions practices. Sixty two subjects (15.9%) had never heard about universal precautions. Three hundred and nine nurses (79.2%) thought that it was essential to use universal precautions in clinical nursing. Among the subjects, one hundred and fifty seven subjects (40.3%) thought there were problems of using universal precautions in nursing practice.

**Research objective 1: To identify the knowledge toward AIDS of nurses at PUMC hospital**

In this study, the total mean score of knowledge toward AIDS of subjects was 13.5 (Table 4). So knowledge toward AIDS of nurses was identified at fair level. Lack of education was one of reasons for the knowledge deficit. In demographic data, two hundred and seventeen nurses (55.6%) did not receive the training of AIDS. Education relating AIDS was proved to be effective to increase the knowledge regarding AIDS (Turner, Dorothy, Ellison, & Greiner, 1988). So the deficit knowledge in this study indicated the urgent needs of education of AIDS. Lack of experience of caring AIDS patients also influenced negatively on nurses' knowledge toward AIDS. In the study of Hanghey, Scherer, and Wu in 1989, the nurses who had cared for AIDS patients scored significantly higher score overall than those without experience. From the demographic data of the subjects in this study, 328 nurses (84.1%) had no experience of caring for AIDS patients. So the needs of education was particularly prominent among the nurses at PUMC hospital.

In this study, the mean score of knowledge in associate degree nurses was 14.0 and the mean score of knowledge toward AIDS in diploma nurses was 13.4 (Table 5). This is similar with the result of the study by Lawrence and Lawrence in 1989, where nurses with high levels of education had more knowledge of AIDS. This indicated that the more education might help nurses to get more knowledge.

The result in Table 6 showed that the subjects had

different scores in each aspect of knowledge toward AIDS. The subjects were most knowledgeable about HIV transmission. The greatest knowledge deficit was in relation to manifestation of HIV infection, HIV antibody testing. The mean scores in other aspects of knowledge such as epidemiology of HIV infection, treatment, AIDS causal agent, and universal precautions were also not good.

From the data shown in Appendix C, 93.8% of subjects knew the right meaning of AIDS definition. Eighty four point six percent subjects knew it was T-helper cell that the virus destroyed. And 94.6% of subjects knew it was the body immunity being destroyed and vastly decreased in AIDS patients. However, only 46.2% of subjects could correctly answer the name of the virus. This indicated that the nurses had muddled information about the AIDS causal agent.

While in the study, 36.9% of subjects did not know where AIDS was first diagnosed. Seventy seven point four percent subjects could identify that the majority of HIV infected persons in China were intravenous drug users. This indicated that nurses still lack knowledge of epidemiology of HIV infection all over the world.

The aspect of HIV transmission gained the highest mean score in total of the knowledge questionnaire. There were 374 nurses (95.9%) who can identify that using the same needle injection was the main way of HIV transmission. And 96.9% subjects thought that contact with patients' blood or vaginal discharge without protective barrier was the most dangerous way

of HIV transmission to health personnel in hospital. The finding was similar with the study of Haughey, Scherer and Wu (1989) among RNs in Erie county, New York. In their survey, the subjects also were most knowledgeable about transmission of HIV infection. Nevertheless, it was different from the previous studies by Steele and Melby in 1995 where the nurses usually choose untransmitting ways as the routes of transmission which was related to lack of knowledge and fear of contagion.

The knowledge of abnormal signs and symptoms of HIV infection was one important aspect in knowledge regarding AIDS. In this study, 64.6% of subjects can identify the length that HIV antibody is positive following infection. And 54.6% of subjects did not know the opportunistic infection in respiratory system is the most common. This revealed the misconception of nurses about the signs and symptoms of HIV infection. It was consistent with the study by Van Servellen and colleagues in 1988 where only 11.9% of nurses could identify the AIDS related symptoms correctly. The finding in this study may be influenced by lack experience of caring AIDS patients. Nonetheless, nurses should be knowledgeable about the signs and symptoms of HIV infection so as to cope with the increasing HIV infected patients.

The great knowledge deficit in this study was the aspect of HIV antibody testing with the mean score was 0.48. Only 50.3% of nurses knew ELISA was the one cheap, easily using and popular method for HIV antibody testing. Thirty point three percent subjects knew Western-Blot could be used to confirm the

HIV positive diagnosis. The misconception of laboratory testing may lead to high expectation of testing in diagnosis of HIV infection.

In order to identify the nurses' knowledge of UPs. The seven items regarding universal precautions was included in the questionnaire. The mean score of this aspect was 0.57. Of the finding, only 43.1% of subjects correctly chose the disinfectant to destroy HIV on the surface of instrument. And only 26.2% nurses knew the right disinfectant used with HIV infected metal instrument. Nearly 40% of subjects chose overcaution approach as one measure to prevent HIV or other bloodborne pathogens transmission in hospital. Forty four point one percent of nurses could point out the best usefulness of universal precautions was protecting health personnel from the transmission of HIV or other bloodborne pathogens at hospital. As only 10.5% nurses in this study had attended the training in universal precautions, it was not strange that nurses had the misunderstanding of universal precautions.

In summary, the knowledge toward AIDS was identified at fair level. The deficit knowledge regarding aspects of AIDS causal agent, manifestation, treatment, HIV antibody testing and universal precautions were investigated. Lack of training of AIDS and UPs, as well as lack of experience of caring AIDS patients contributed this knowledge deficit. This finding indicated that the urgent needs of education regarding both AIDS as well as universal precautions.

**Research objective 2: To identify the attitudes toward AIDS of nurses at PUMC hospital**

In this study, the mean score for attitudes was 34.1 with SD of 5.75 (Table 8). The attitudes toward AIDS of the subjects were identified at poor level. This was similar with previous studies (Boland, 1990; Gillespie, 1993; Kelly, Lawrence, Hood, Smith, & Cook, 1988; St Lawrence et al., 1986; Van Servellen, Lewis, & Leake, 1988).

In this study, the mean score of attitudes in associate degree nurses was 34.1 and the mean score in diploma nurses was 33.9 (Table 9). This indicated that nurses had poor attitudes toward AIDS in this study. This is different from many previous studies where knowledge was positively related with attitudes toward AIDS (Blumenfield, Smith, Seropian, & Wormer, 1987; O'Donnell, O'Donnell, & Pleck, 1987; Young, Kouch, & Preston, 1989). However, it is similar with the study of Kemppainen and colleagues (1992) where nurses who considered themselves most knowledgeable about AIDS were consistently less willing to provide nursing care for AIDS patients; and the study of Laster and Beard (1988) where greater knowledge was related to greater fear. The authors explained the result as knowledge may not be the only factor infecting the attitudes toward AIDS.

When analyzed the findings shown in appendix C, the following results will be found. Among 390 subjects, ninety nine point three percent of nurses believed that AIDS was a critical public health problem, and 72.1% of subjects agreed

or strongly agreed AIDS was the most fear disease. And 63.9% nurses reported they were fear while taking care of HIV infected patients. Although the most of nurses had no experience of caring AIDS patients, the fatality of the disease still cause a serious fear in this population. The finding was similar with many previous studies where fear of contagion was always the common feelings in the survey focusing on the attitudes toward AIDS. In the study of Scherer and colleagues in 1992, fifty nine percent of critical nurses agreed that they were fearful of contracting AIDS from patients. And Wissen and Woodman (1994) investigated the reasons of the fear when they did the focus group interviews to ascertain the attitudes of nurses. In the interviews, the majority of nurses openly stated the fear was in part due to unknowing who is HIV positive patient, and in part due to lack of knowledge which coupled with lack of experience. All these reduced their confidence in caring AIDS patients.

Although the subjects in this study were most knowledgeable in transmission of HIV, there still have 73.6% of subjects agreed or strongly agreed that nurses were at high risk to get HIV infection. Seventy one point five percent of nurses expressed that they worried their families and friends were at the risk of HIV infection if the HIV positive patients increased in the hospital. The fear and perceived high risk made a high commitment of testing for HIV antibody. In the study, seven two point one percent of nurses

agreed that all patients should be tested for HIV antibody on admission to hospital. The finding was similar as the result in the study by Hunt, Waddell and Robathan in 1990 where 45.3% of nurses who participated in the survey wanted patients to be tested. The high percentage of nurses who wanted patients to be tested in this study also verified the misunderstanding of testing among nurses in this study.

The universal precautions as an alternative method of infection control had gained the faith from 80% of subjects in this study. And 97.7% of subjects believed that AIDS could be prevented.

This poor behavioral intention toward AIDS patients which led by the fear was also invested in this study. Of the finding, the 66.4% of subjects reported that they were unwilling to take care of symptomatic AIDS patients. Furthermore, the 45.4% nurses wanted to change job if the number of AIDS patients increase in the hospital. And 83.6% of nurses thought the pregnant nurses should avoid caring for AIDS patients. This revealed the poor attitudes and its potential influence on nursing practices. It is hardly to believe that the AIDS patients can get good, fair treat from the nurses who has this attitudes.

Among the subjects, 91.6% of nurses agreed that the HIV positive patients should be sympathized. Ninety three point one percent nurses agreed that nurses should usually give reassurance and mental support to AIDS patients. All these were converse with studies in other countries where

stigmatizes toward AIDS coupled with fear were the main feeling regarding AIDS patients. In previous studies, the AIDS patients always were perceived to have responsibility for their illness (Lawrence & Lawrence, 1989). The reason of this difference may lay in that a large amount of HIV infected people are hiding among the ordinary in China and the damage in both economic and society caused by AIDS still stashed under the sight of people.

Ninety six point two percent of subjects agreed that nurses should support the relatives or family members to become caregivers of AIDS patients. And 83.6% of nurses agreed that nurses should not refuse to take care of AIDS patients. This was different from the above answers of unwilling to care for AIDS patients. This showed the nurses were willing to care for AIDS patients in theory not in practices.

In summary, fear of contagion, worry of exposure, perceiving high risk, unwilling or refusing to care, want to transfer reflected the attitudes of nurses at PUMC hospital. This kind of attitudes may lead to negative influence on AIDS nursing in the future in China. These findings indicated the needs of education toward addressing good attitudes.

**Research objective 3: To identify the universal precautions practices of nurses at PUMC hospital**

In this study, the universal precautions practices of nurses was at fair level (Table 10). The total mean score for

the universal precautions practices was 56.19. The results showed that the highest mean score of 2.87 presented for the very good practices of handwashing. The lowest mean score of 1.99 presented for the poor practices of using protective barriers (Table 12).

The data in Table 11 showed that the mean of UPs practices in diploma nurses was 56.78 and at good level. And the mean of UPs practices in associate degree nurses was 53.43 which was at fair level. This was similar with the result of the study by Gruber, in 1989, in which nurses who scored low in knowledge were more likely to implement UPs. This indicated that the universal precautions practices were not influenced only by knowledge.

Handwashing is one of the most important measures in the universal precautions. It also is the most effective way to prevent the spreading of HIV or other bloodborne pathogens in health care settings. Although 349 nurses reported they had not received the training of universal precautions, more than 90% of nurses reported that they always did handwashing when contacting with blood or body fluids of patients, after finishing caring for patients as well as before leaving the wards.

The mean score for the practice of waste disposal, housekeeping and disinfection was 2.31 with SD of 0.63. It was at the good level of universal precautions practices.

In the findings (appendix C), only 18.7% nurses always wear gloves when they had to contact with blood or body

fluids of patients, such as drawing blood. Less than half of subjects always wear gloves when handling items or equipment soiled with blood or other body fluids, when taking care of patients with wound in their hand. Only 41.5% of subjects always changed gloves before providing care to each different patient. There were many reasons leading to the poor practices of using protective barriers. One important reason was unavailability of supplies i.e. gloves, masks. At PUMC hospital, a few of one time used gloves were supplied in ward. The repeated used, sterilized gloves were supplied usually for physicians for some certain procedures in wards. Although HbsAg positive patients were more than 10 percent of the total patients now, there neither had clear guideline of using gloves, nor the enough supplies of gloves for nurses. Some nurses might be criticized by head nurses if they always wear gloves. Lack of related knowledge may be the another reason. There were 347 nurses (89.5%) who reported that they did not receive the training of universal precautions. Many nurses did not know how to use the protective barriers properly. Under this situation, it is very difficult for nurses using this safe way to protect themselves as well as patients. So, although nearly 40% of subjects chose overcautious approach as one measure to prevent HIV or other bloodborne pathogens transmission in hospital, and 80% subjects agreed or strongly agreed that universal precautions can protect health personnel from HIV infection, the UPs practices still were poor.

From the previous studies, sharp injuries, including needle sticks, account for 75% of all cases of occupationally related HIV transmission. So avoiding sharp injuries was very important for health personnel to prevent bloodborne pathogens infection. The mean score for the practices of avoiding injuries from sharp instrument in this study was 2.117 and at the fair level. Of the finding (appendix c), only 38.7% subjects always used the sharp instruments by using no touch technique. There were 42.6% subjects always recap the needle after injection or drawing blood which is strictly forbidden by UPs recommendation. Only 24.6% nurses did not recap the needle. As we know needle stick injuries were presented by far the greatest risk of occupational infection with HIV. And needle stick injuries in many cases have been shown to be related to recapping contaminated needles and improper disposal techniques. The finding here was similar with the study of English in 1992 where recapping needles accounted for a highest percentage than any other activities that caused sharp injuries. That study strongly suggested that knowledge leads to different actions; safer needled devices and needle-free systems could make a safer workplace. However, there was neither the guideline of universal precautions nor enough safer devices at PUMC hospital.

Basing on above findings, the factors that led to poor UPs practices can be summarized as: (1) lack the clear guideline of UPs in hospital, (2) unavailability of supplies,

(3) lack of training in UPs. These factors were similar with the results of study of Gerson and colleagues in 1995, and the study by Gruber and coworkers in 1989.

The findings in this study indicated that the needs of reassessing the effectiveness of policies regarding infection control in hospital and the urgent needs of training in universal precautions for nurses.

**Research objective 4: To examine the relationships among knowledge and attitudes toward AIDS and universal precautions practices of nurses at PUMC hospital**

According to the questions in this study, the partial correlation analysis had been used to examine the relationship between each two variables while there is the influence from the third variable. The results of these parts would be presented as following.

After data analysis, there was at low level of statistic positive relationship between knowledge toward AIDS and attitudes toward AIDS with the partial correlation coefficient was 0.1165, at the 0.05 level (Table 14). This finding indicated that the low level of knowledge toward AIDS may relate to the poor attitudes toward AIDS and increase knowledge toward AIDS may improve the attitudes toward AIDS. This result is consistent with the findings in study of Lawrence and Lawrence in 1989 that knowledge was positive correlated with more favorable attitudes toward AIDS. Lack of knowledge could lead to more fear, perceiving high risk of

professional exposure, refusing to care for AIDS patients. This result indicated the needs of education program regarding AIDS knowledge to improve the attitudes toward AIDS of nurses.

Although the relationship between knowledge toward AIDS and attitudes toward AIDS was very low, the findings from this study partially support the conceptual framework of this study that knowledge toward AIDS is the base of forming and changing of attitudes toward AIDS.

Partial correlation analysis also had been done to examine the relationship between the attitudes toward AIDS and universal precautions practices when the influence from knowledge toward AIDS was controlled. After data analysis, there was at low level of statistic positive relationship between these two variables with partial correlation coefficient was 0.1318, at the 0.05 level (Table 15). This finding indicated that the poor attitudes toward AIDS related with the poor practices of universal precautions of nurses. The good attitudes toward AIDS related with the good practices of UPs.

The previous study of Van Servellen and colleagues in 1988 all suggested that nurses with poor attitudes toward AIDS usually chose overcautions practices to protect themselves from infection.

Whereas the result in this study is similar with the study of Brusit and Evangelisti (1992), implementing the universal precautions made 15% increasing comfort in giving care to AIDS patients and other improvement in attitudes toward

AIDS. So this findings reflect the influence of universal precautions practices upon the attitudes toward AIDS of nurses. The poor universal precautions practices may increase the fear of contagion and led to the poor attitudes toward AIDS.

Although there was a positive relationship between attitudes toward AIDS and universal precautions practices of nurses, the degree of this correlation was very low. One of the reason may related that the universal precautions practices may not be the real intention of nurses' behavioral. It had been influenced by many other factors such as unavailability of supplies, lack of guidelines of UPs.

The relationship between the knowledge toward AIDS and universal precautions practices also had been examined by partial correlation analysis in this study. After data analysis, there was no statistical correlation between these two varisables ( $p > 0.05$ ) (Table 16). The finding reveal that knowledge toward AIDS has no statistical influence on the universal precautions practices of nurses. This indicated that the UPs practices of nurses may be influenced by some other factors not only by knowledge toward AIDS.

This is consistent with the study of Gruber in 1989, where no relationship was found between knowledge toward AIDS and UPs.

The finding indicated that knowledge and attitudes toward AIDS and universal precautions practices of nurses in this study affected one another. These relationships indicated that knowledge and attitudes toward AIDS and universal

precautions practices of nurses can not be separated when aiming to improve nurses' ability of coping with the increasing AIDS epidemic. Giving knowledge toward AIDS together with improving universal precautions practices may be more effective on improving attitudes toward AIDS of nurses.

#### Summary of the results

The results of this study showed that

1. The knowledge toward AIDS of nurses was fair. The mean scores of knowledge toward AIDS of associate degree nurses and diploma nurses were all at the fair level. The subjects were most knowledgeable about HIV transmission. The greatest knowledge deficit lay in aspects of knowledge regarding HIV infected manifestation, testing for HIV antibody.

2. The attitudes toward AIDS of nurses were poor. The attitudes toward AIDS of associate degree nurses and attitudes toward AIDS of diploma nurses were all at poor level.

3. The universal precautions practices of nurses was not good. The practices of associate degree nurses was at fair level. The universal precautions practices of diploma nurses was at good level. The handwashing was the best UPs practices of subjects, and using protective barriers was the poorest practices of nurses in this study.

4. There was at low level of statistical positive relationship between knowledge toward AIDS and attitudes toward AIDS when the influence from universal precautions

practices of nurses was controlled ( $r=0.1165$ ;  $P<0.05$ ). There was at low level of statistical positive relationship between attitudes toward AIDS and universal precautions practices when the influence from knowledge toward AIDS of nurses was controlled ( $r=0.1318$ ;  $P<0.05$ ). No statistical relationship between knowledge toward AIDS and attitudes toward AIDS was found in this study ( $r = 0.0916$ ;  $p > 0.05$ ).