



## CHAPTER III

### RESEARCH METHODOLOGY

#### 3.1 Research design

This study was conducted as a cross-sectional descriptive research with self-administered questionnaires in Bamrasnaradura Institute from 1 to 31 January 2003.

#### 3.2 Study population

Populations were all healthcare workers in Bamrasnaradura Institute. According to the name lists of healthcare workers in Bamrasnaradura Institute, The total number of healthcare workers was 803 persons which were comprised of;

1. Medical doctors	43	persons
2. Dentists	3	persons
3. Laboratory department personnel	72	persons
4. Rehabilitation department personnel	23	persons
5. Registered nurses	115	persons
6. Technical nurses	84	persons
7. Permanent workers (nurse aids)	38	persons
8. Temporary workers (nurse aids)	183	persons
9. Pharmacists	6	persons
10. Workers in pharmacy department	28	persons
11. Administrative staff	208	persons

Since not all healthcare workers have direct contact with the patients, pharmacists and administrative staff (e.g. financial department, human resource, etc.) who do not have direct contact with patients were excluded from the sample frame. The total number of population in sampling frame was 561 persons. Healthcare

workers were classified into three groups according to their educational level and training.

1. Doctors and dentists	46	persons
	(5 were on leave of absence)	
2. Nurses	199	persons
3. Other healthcare workers	316	persons
Total	561	persons

### 3.3 Sampling method

Sampling technique: This study used stratified sampling technique from all healthcare workers in Bamrasnaradura Institute.

Sample size: Yamane's formula, which uses for survey research that has known finite population, was used to calculate sample size because it was a simple formula that fit for the study (Yamane, 1967).

$$n = \frac{N}{1 + (N * e^2)}$$

**(e - Level of acceptable error=0.05)**

$$\begin{aligned} \text{Total sample (n)} &= \frac{561}{1 + (561 * 0.05^2)} \\ &= 234 \text{ persons} \end{aligned}$$

Sample size was allocated by the proportion of 234/561 from each group except for the doctor and dentist group which was small in population. All doctors and dentists were studied.

$$\text{Sample size for gr.1 (Doctors and dentists)} = 41 \text{ persons}$$

$$\text{Sample size for gr.2 (Nurses)} = 83 \text{ persons}$$

$$\text{Sample size for gr.3 (Other healthcare workers)} = 132 \text{ persons}$$

Exclusion: Healthcare workers who were absent from the hospital at study time.  
(Absent for study, post-partum, etc.)

Questionnaires were distributed to 41 doctors and dentists, 120 nurses and 190 other healthcare workers. Extra questionnaires were distributed to reduce the problem of non-response bias.

### 3.4 Data collection

Questionnaires were distributed to healthcare workers randomly by their working time shift at each department (all healthcare workers had their own time period of work. The questionnaires were distributed to one random shift of time per department). Questionnaires were handed back to me after subjects had finished all questions.

### 3.5 Questionnaire returned rate

The questionnaire returned rate was high in nurses and other healthcare worker group (91.7% and 95.3% respectively) but low in doctor and dentist group (48.8%) (Table 3.1)

Table 3.1 Questionnaire returned rate

Groups of healthcare workers	Total questionnaires distributed	Number of questionnaires returned	Returned Rate (%)
Doctor and Dentist	41	20	48.8
Nurse	120	110	91.7
Other Healthcare Worker	190	181	95.3
Total	351	311	88.6

The questionnaire returned rate of doctor and dentist might be the threat to validity of the study because sample might not represent the population. To solve this problem, Demographic data of response group of doctors and dentists were compared

with non-response group and found that there was no statistical difference between both groups. Sex of respondents was 12 males and 8 females. In non-response group were 11 males and 10 females (p-value = 0.31). The similar results were obtained for age and years of work experience (p-value = 0.426 and 0.107). All of their educational backgrounds were at least bachelor degree of medicine or dentistry and all have been trained about UPs. From the finding, socio-demographic data of response group were similar to non-response group, and could be used to represent all doctors and dentists in the institute. But this was one of the threats to internal validity in this study (See Table 3.2).

Table 3.2 Comparison of socio-demographic data between response and non-response group of doctors and dentists

Socio-demographic data	Group		Chi Square	df	p-value	
	Response (n=20)	Non-response(n=21)				
Age	<40	12 (60.0)	12 (57.1)	0.34	1	0.426
	>41	8 (40.0)	9 (42.9)			
Sex	Male	12 (60.0)	11 (52.4)	0.241	1	0.312
	Female	8 (40.0)	10 (47.6)			
Years of work experiences	<10	11 (57.9)	7 (33.3)	3.369	2	0.093
	11-20	4 (21.1)	10 (47.6)			
	>20	4 (21.1)	4 (19)			
Years of work experiences (correct cells that count <5 for chi-square test)	<10	11 (57.9)	7 (33.3)	2.431	1	0.107
	>11	8 (42.1)	14 (66.7)			

\*All data were from administrative office of Bamrasnaradura Institute

### 3.6 Research instruments

Self-administered questionnaire, using a combination of closed- and open-ended questions, was developed from literature review and opinions from two medical experts at Bamrasnaradura Institute. The questionnaire asked about demographic information, knowledge base on diseases, mode of transmission, prevention, CDC guidelines for Universal Precautions against blood-borne pathogens, attitude toward Universal Precautions, and other factors related to compliance of Universal Precautions practices. The questionnaire was divided into 5 parts:

**3.6.1 Socio-demographic part:** There were 9 questions in this part. The questions asked about age, sex, marital status, education, work experience, work position, work place, Universal Precautions experience and training. Most questions were presented in multiple choices format.

**3.6.2 Knowledge part:** There were 10 questions in this part which were composed of 3 components: 4 questions about definition and principle of Universal Precautions (questions no.1-4), 4 questions about application of Universal Precautions (questions no. 5, 6, 9, 10), and 2 questions about knowledge about HIV infection (questions no. 7, 8). Each question was scored separately. Summation of scores in knowledge part was used to classify healthcare workers into three groups: high, moderate and low level of knowledge about Universal Precautions as in school examination grading system. High knowledge level group had more than 80% correct answers. Moderate knowledge level group had 60%-80% correct answers and <60% for low knowledge level group.

**3.6.3 Attitude part:** Likert's scale technique was chosen for attitude part. There were 3 components in attitude part. The first 6 questions asked about healthcare

workers' beliefs in Universal Precautions. The next 6 questions asked about healthcare workers' feelings toward Universal Precautions practice. And the last 7 questions asked about their intention to practice Universal Precautions.

All individual answers were summed up for total scores and the mean score were calculated. The mean scores were used to divide healthcare workers into three groups. Positive attitude group score were 3.5-5.0, Neutral attitude group score were 2.5-3.49, and Negative attitude group score were below 2.5.

Likert's method was used to collect data on attitudes because the scale was easy to understand and it was also easy to be developed.

#### **Steps for developing an attitude scale (using Likert's technique)**

1. Developed statements both favorable and unfavorable statements.
2. Weighted statement scale as followed:

Level of agreement	Score	
	favorable statement	unfavorable statement
1. Strongly disagree	5	1
2. Disagree	4	2
3. Undecided	3	3
4. Agree	2	4
5. Strongly agree	1	5

#### 3. Pre-testing the developed scale

Pre-testing the developed scale was done with healthcare workers in Sikarin Hospital, which are quite similar to Bamrasnaradura Institute in term of size and capacity. The questionnaires were distributed to 30 respondents. The internal consistency of the questionnaire was analyzed by calculated their

Cronbach's Alpha Coefficient. All mistakes were corrected before implementation.

**3.6.4 Practice part:** In this part, a total of 20 questions were asked about the respondents' frequency of practice of self protection, practice in emergency situation, equipment usage and training. Each question had a scale of 1-5, 1 being never and 5 being very often. Healthcare workers had to rate each question according to their practice. The means score of healthcare workers were used to classify them into three groups: high practice level group (frequency >80%), moderate practice level group (frequency = 60%-80%) and low practice level group (frequency <60%).

**3.6.5 Other enabling and reinforcing factors:** There were 8 questions in this part. Two questions about availability of equipments (no. 1, 2), Four questions about hospital policy (no.3, 4, 7, 8), and two questions about hospital environment and peer pressure (no 5, 6). Mean score above 4.0 was used as a criterion to justify their agreement with the policy of the institute while means score below 4.0 represented their disagreement with the policy

### **3.7 Validity of the instrument and the study**

#### **3.7.1 Internal validity:**

3.7.1.1 Construct validity. Each variable was defined accordingly with basic health behavior's model and questionnaire was reviewed by two medical experts at Bamrasnaradura Institute.

3.7.1.2 Instrument validity (internal consistency) and reliability. Questionnaire was pre-tested in Sikarin Hospital, which was nearly the same in size and capacity to Bamrasnaradura Institute, and calculated for Cronbach's Alpha

Coefficient that were 0.90 for attitude part, 0.86 for practice part and 0.77 for other enabling factor part.

### 3.7.2 External validity:

Population validity: this study used stratified random sampling, which would decrease selection bias.

## 3.8 Data analysis

Table 3.3 Data analysis

Analytic parts	Statistical method
Questionnaire Knowledge Attitude and practice	Cronbach's Alpha Coefficient Cronbach's Alpha Coefficient
Demographic and UPs practice	Descriptive statistics: mean, SD, frequency, and percentage
Hypothesis testing: 1. the difference in KAP among healthcare workers 2. Association between factors and UPs practice	Chi-square test

The reliability of questionnaire was analyzed by using Cronbach's Alpha Coefficient. Demographic data were analyzed by descriptive statistics (mean, SD, frequency and percentage). Finally, chi-square was used to compare effects of each factor among healthcare workers' groups.

## 3.9 Confidentiality and ethical consideration

Research committee of Bamrasnaradura Institute reviewed the research proposal for ethical consideration and allowed me to conduct this research in the Institute on December 2002. For confidentiality, since some parts of answers may affect respondents' work, every received data was treated carefully and privately with no name tag. None of the questionnaire can be traced back to the respondents. Finally, each respondent was asked for their consents, before answering the questions.