



CHAPTER II

LITERATURE REVIEW

There are three related areas of literature review in this chapter

2.1 Universal Precautions

2.2 Health behavior

2.3 Related research and Conceptual Framework

2.1 Universal Precautions

The CDC has introduced the Universal Precautions guideline since 1985 mainly because of the widespread of HIV (Human Immunodeficiency Virus) infection. In addition to HIV, other blood borne pathogens such as viral hepatitis A, B, C, and CMV (Cytomegalovirus) are also threatening. Infections caused by these pathogens lead to serious illness such as AIDS, viral hepatitis, hepatocellular carcinoma, and more. The CDC (Center for Disease Control and Prevention) developed strategies for “Universal blood and body fluid precautions” to address its concerns regarding transmission of HIV in the healthcare setting. The concept now referred to simply as “Universal Precautions (UPs)” stresses that all patients should be assumed to be infectious for HIV and other blood borne pathogens. (Friede, et al., 1997:292-293)

2.1.1 Definition: Universal Precautions are guidelines to protect health care workers, as well as patients, from exposure to HIV, hepatitis B, hepatitis C, and other blood borne germs. Following these guidelines, health care workers treat blood, certain body fluids (including semen, vaginal fluid, and synovial fluid), and tissue from all patients as if they were infectious. The guidelines do not apply to body fluids

such as sweat, tears, saliva, urine and feces unless they contain visible blood (CDC, 1985:681-686, 691-695).

2.1.2 Routes of exposure to blood borne pathogens: There are three routes that pathogens can infect health care workers (Friede, et al., 1997: 293)

2.1.2.1. Percutaneous inoculation or contact with self-injury opened wound with contaminated instruments.

2.1.2.2. Contact contagious blood or secretion through existing wound.

2.1.2.3. Contact contagious blood or secretion through mucosal epithelium.

2.1.3 Body fluid classification: Body fluid or secretion from patients' body can be divided according to their HIV loading into 4 groups (Unhalakka, 1999: 139).

2.1.3.1. Very high HIV loading - Only cerebrospinal fluid is classified in this category.

2.1.3.2. High HIV loading – blood, semen, synovial fluid, amniotic fluid and pericardial fluid

2.1.3.3. Moderate HIV loading – milk, vaginal and cervical secretions

2.1.3.4. Very low HIV loading (do not need Universal Precautions unless they contain visible blood) – tears, saliva, urine, feces, nasal secretions, sputum, sweat, and vomitus.

2.1.4 Principles of Universal Precautions (Unhalakka, 1999:140).

Avoidance is the best way of self-protection against work related infections. This is the main concept of Universal Precautions. Three main practices that will protect healthcare workers from work related infections are

2.1.4.1 Self protection from accidental injury from medical instruments

2.1.4.2 Appropriate use of protective barriers

2.1.4.3 Sanitation and hygiene of working area

2.1.5 Benefits of practicing Universal Precautions for both healthcare

workers and patients: (Sawangdee, 1995:6)

2.1.5.1 Decrease risk from getting work related infections.

2.1.5.2 Prevent spreading of diseases in hospital among healthcare workers and patients

2.1.5.3 Decrease infected patients' feeling of unequal care and management by using the same practice as non infected patients.

2.1.5.4 Decrease the need to test patients' blood for HIV status by using Universal Precautions that will decrease laboratory work and protect patients' rights.

2.1.6 Universal Precautions guidelines (Friede, et al., 1997: 316).

Since medical history and examination cannot reliably identify every patient that is infected with HIV or other blood borne pathogens, blood and body fluid precautions should be consistently used for all patients. This approach, previously recommended by the CDC and referred to as "Universal blood and body fluid precautions" or "Universal Precautions", should be used in the care of all patients, especially those in emergency care setting in which the risk of blood exposure is increased and the infectious status of the patient is unknown.

2.1.6.1 All healthcare workers should use appropriate precautions barriers routinely to prevent skin and mucous membrane exposure when contact with blood or other body fluids of any patients is anticipated.

2.1.6.2 Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

2.1.6.3 All healthcare workers should take precautions to prevent injuries caused by needles, scalpels and other sharp instruments or devices during procedure; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures.

2.1.6.4 Although saliva has not been implicated in HIV transmission, to minimize the need for emergency mouth-to-mouth resuscitation, mouthpieces, resuscitation bags, or other ventilation devices should be available for use in areas in which the need for resuscitation is predictable.

2.1.6.5 Healthcare workers who have exudative lesion or weeping dermatitis should refrain from all direct patient cares and from handling patient care equipment until the condition is resolved.

2.1.6.6 Pregnant healthcare workers are not known to have a greater risk for contracting HIV infection than other healthcare workers who are not pregnant; however if a healthcare worker acquires HIV infection during pregnancy, the infant is at risk for infection resulting from perinatal transmission. Because of this risk, pregnant healthcare workers should be especially familiar with and strictly adhere to precaution guidelines to minimize the risk of HIV transmission.

2.1.7 Some important causes that might lead to work related infections.

There are many factors that cause work related infections such as unawareness to use protective barriers, untrained or poor in Universal precautions skills (detail in Figure 2.1).

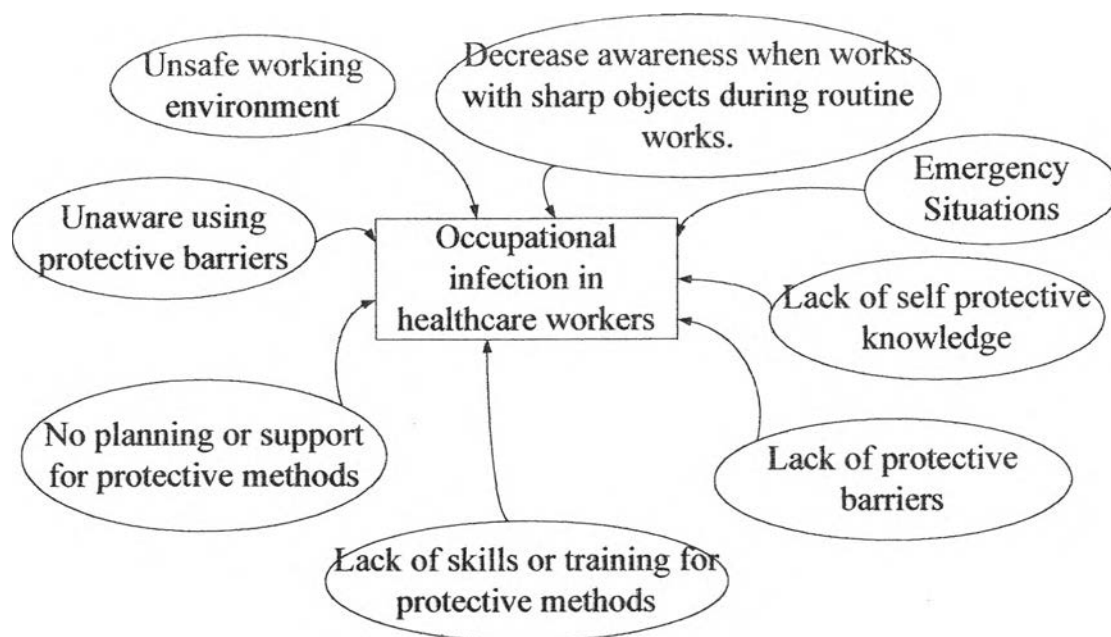


Figure 2.1 Causes of occupational infections (Sawangdee, 1995).

2.2 Health behavior

There is no single best definition for health behavior, but one main principle about health behavior is that it has two components. (Suwan, 1994)

Overt behavior – observable or visual behavior

Covert behavior – wide range of psychological factors such as beliefs, attitude, perception, values, etc. Researcher can use each component as a variable for behavioral study according to their objectives.

There are many models and theories that are used to explain health behavior. Some are more easily translated into behaviors than others. The following are few examples of health behavioral models that have been used in this study.

2.2.1 Bloom's learning theory Bloom classified learning behavior into three domains and that learning is affected by these three domains. (Suwan, 1994: 212-234)

2.2.1.1 Cognitive domain – ability and capacity to understand. It is divided to 6 more steps: Knowing, Comprehension, Application, Analysis, Synthesis and Evaluation. Before we can target behavior that we need in cognitive domain, we have to define study population. Then we will be able to identify what they must know, what is useful to know and what is nice to know.

2.2.1.2 Affective domain – behavioral part that affect from attitude, habit, value, and moral. There are 5 steps in affective domain: Receiving, Responding, Value, Organization, and habitual behavior.

Attitude is one component in the affective domain. There are many definitions for attitude, which do not have a conclusion yet. Attitude is an opinion with emotional involvement to act against external situation. There are three components of attitude:

2.2.1.2.1 Cognitive component: this component is involved with individual's belief.

2.2.1.2.2 Affective component: this component is about feeling toward the object/situation (positive or negative feeling toward problem).

2.2.1.2.3 Behavioral component: personal own intention to do something.

Attitude measurement tools (Suwan, 1994: 228)

There are many tools developed to assess attitude but most are based on rating scale. These tools are

1. Equal Appearing Interval (Thurstone's method)

2. Summated Rating (Likert's method)
3. Semantic Differential (Osgood's method)
4. Scalogram Analysis (Guttman's Scale)
5. Guilford's method
6. Social Distance Scale
7. Sociometry
8. Projective Technique (Association, Fantasy, Ambiguous Stimuli, Conceptualization)

2.2.1.3 Psychomotor domain – ability to practice and express of body can be divided into 5 steps: Imitation – select interested behavior, Manipulation – try to act in that behavior, Precision – decision to act in that behavior, Articulation – continued practice, Naturalization – skillful and usual practice

2.2.2 The Health Belief Model (Rosenstock, et al., 1988: 175-183)

The Health Belief Model (HBM) attempts to predict health-related behavior in terms of certain belief patterns. The model is used in explaining and predicting preventive health behavior, as well as sick-role and illness behavior. The HBM has been applied to studies all types of health behavior. A person's motivation to undertake a health behavior can be divided into three main categories: individual perceptions, modifying behaviors, and likelihood of action. Individual perceptions are factors that affect the perception of illness or disease; they deal with the importance of health to the individual, perceived susceptibility, and perceived severity. Modifying factors include demographic variables, perceived threat, and cues to action. The likelihood of action discusses factors in probability of appropriate health behavior; it is the likelihood of taking the recommended preventive health action. The combination of these factors causes a response that often manifests into action,

provided it is accompanied by a rational alternative course of action. This model can be applied to Universal Precautions as in Figure 2.2.

1. The perceived susceptibility to infection by work related infectious diseases
2. The perceived severity of work related infectious diseases
3. The perceived threat of work related infectious diseases
4. The perceived benefits minus barriers of action to protect work related infectious diseases

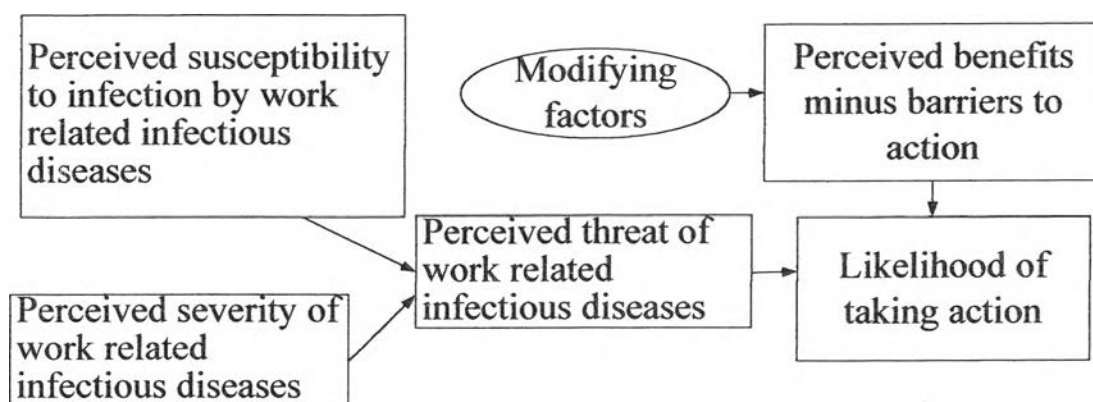


Figure 2.2 Health Belief Model (Kaplan, et. al., 1993)

The above four major perceived areas can reflect both knowledge and attitude of healthcare workers toward practicing of Universal Precautions. For knowledge part, workers need to know about causes, severity, modes of transmission, prevention and treatment of infectious diseases. For attitude part, there are beliefs, feeling and intension toward Universal Precautions.

2.2.3 PRECEDE-PROCEED Model (Green, 1991)

The Precede model is a framework for the process of systematic development and evaluation of health education programs. An underlying premise of this model is that health education is dependent on voluntary cooperation and participation of the participants in a process which allows personal determination of behavioral practices; and that the degree of change in knowledge and health practice is directly related to the degree of active participation of the participants. Therefore, in this model, appropriate health education is considered to be the intervention (treatment) for a properly diagnosed problem in a target population.

This model is multidimensional, founded in the social/behavioral sciences, epidemiology, administration and education. As such, it recognizes that health and health behaviors have multiple causations which must be evaluated in order to assure appropriate intervention. The comprehensive nature of Precede model allows for application in a variety of settings such as school health education, patient education, community health education, and direct patient care settings.

Proceed was added to the model in the late 1980s based on L. Green's experience with Marshall Krueter in various positions with the federal government and the Kaiser Family Foundation. Proceed was added to the framework in the recognition of the emergence of and need for health promotion interventions that go beyond traditional educational approaches to change unhealthy behaviors. The administrative diagnosis is the final planning steps to "Precede" implementation. From there "proceed" to promote the plan or policy, regulate the environment, and organize the resources and services, as required by the plan or policy.

The components of proceed take the practitioner beyond educational interventions to the political, managerial, and economic actions necessary to make social systems environments more conducive to healthful lifestyles and a more complete state of physical, mental and social well-being for all.

The purpose of the Precede/Proceed model is to direct initial attention to outcomes rather than inputs. This forces planners to begin the planning from the outcome point of view. In other words, a program planner begins with the desired outcome and work backwards to determine what causes it, what precedes the outcome. Intervention is targeted at the preceding factors that result in the outcome. The model was divided into nine phases or levels as shown in Figure 2.3.

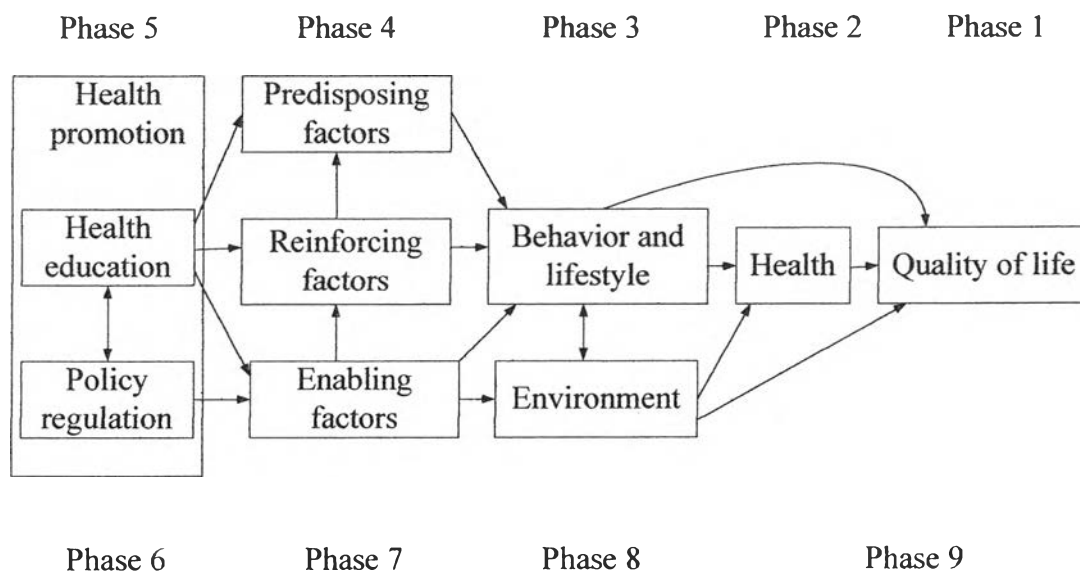


Figure 2.3 PRECEDE-PROCEED Model (Kaplan, et. al., 1993)

Phase 1 Social diagnosis

Phase 2 Epidemiological diagnoses

Phase 3 Behavioral and environmental diagnosis

Phase 4 Educational and organizational diagnosis

Phase 5 Administrative and policy diagnosis

The last four phases are for evaluation

Phase 6 Implementation

Phase 7 Process evaluations

Phase 8 Impact evaluations

Phase 9 Outcome evaluations

This study concerns more on phase 4 because this study applied Universal Precautions practice with individual behavior. This phase assesses the causes of health behaviors. Three kinds of causes are identified - predisposing factors, enabling factors, and reinforcing factors.

The main element of this phase is the selection of the factors, which if modified, will be most likely to result in behavior changes. This selection process includes identifying and sorting (positive and negative) these factors in appropriate categories, prioritizing factors among categories, and prioritizing within categories. Prioritization of factors is based on relative importance and changeability. Learning objectives are then developed which focus on these selected factors.

2.2.3.1 Predisposing Factors - any characteristics of a person or population that motivates behavior prior to the occurrence of that behavior includes: Knowledge, Beliefs, Values, and Attitudes.

2.2.3.2 Enabling factors - characteristic of the environment that facilitates action and any skill or resource required to attain specific behavior such as accessibility, availability, skills, laws (local, state, federal).

2.2.3.3 Reinforcing factors - rewards or punishments following or

anticipated as a consequence of a behavior. They serve to strengthen the motivation for behavior such as family, peers, and teacher.

For this model, behavior results from predisposing factors, enabling factors and reinforcing factors.

2.3 Related research

Poor compliance to Universal Precautions in healthcare workers was found in many researches and involves all levels of healthcare workers.

Doctor group:

Ben-Davis (1997) found that resident anesthesiologists were found to be more compliant with gloving policy than guest attending (61.8% vs. 33.7%, $p < 0.0001$). However, the lower compliance among the attending was entirely attributable to the most senior staff members (over age 55 years) whose compliance rate was 11.5% versus 55.6% for attending staff below age 55 years ($p < 0.0001$). Departmental compliance as a whole was 49.6%. Compliance in pediatric cases averaged 10% and was equally poor among all department staff.

Moore (1998) found that compliance rates in pediatric residents continue to be poor through the course of pediatric training.

Nurse group:

Hiriwattanawong (1998) found that professional nurses used 50.9% strict UPs and 49.1% non-strict UPs protocol.

Other healthcare worker group:

Madan (1998) observed twelve resuscitations involving 104 healthcare workers. None had 100% compliance with barrier precautions. Resuscitations in which active bleeding was observed involved 59 healthcare workers with 38%

compliance. Only 2 out of 59 used full barrier precautions. Dargan (2001) observed that there was a lack of barrier precautions usage such as gloves, masks, gowns, and protective eyewear during trauma resuscitations. Appropriate barrier precautions were routinely used by 63% healthcare workers but only 28% practiced hand washing after degloving. Use of puncture proof container was practiced by 62% of healthcare workers.

These evidences support the hypothesis that Bamrasnaradura Institute may have the same problems in Universal Precautions compliance. However, no study has been done to find out the real situation. Therefore, Bamrasnaradura Institute needs to conduct a study, in order to strengthen their Universal Precautions' policy.

There are some studies that try to identify factors affecting Universal Precautions compliance. Fengli (1997) found that there was a low level of positive relationship between knowledge toward AIDS and attitudes toward AIDS when the influence from UPs practices of nurses was controlled ($r = 0.1165$; $p < 0.05$). There was a low level of positive relationship between attitudes toward AIDS and UPs practices when the influence from knowledge toward AIDS of nurses was controlled ($r = 0.1318$; $p < 0.05$). No statistical relationship was found between knowledge toward AIDS and Universal Precautions practices ($r = 0.0916$, $p > 0.05$).

Hiriwattanawong (1998) found that factors that significantly affected the use of UPs in nurses are perception of benefit, enabling factor in term of UPs training, available of equipment, and hospitals' policy on UPs.

Jeffre (1998) found that preclinical students knew more than clinical students about the efficacy of hepatitis B vaccine, use of antiretroviral therapy after occupational exposure to human immunodeficiency virus, and non vaccinated healthcare workers' risk of infection from needle stick injuries ($P < .001$). Students'

perceived risk of occupational exposure to blood borne pathogens and attitudes toward hepatitis B vaccine did not differ, but preclinical students agreed more strongly that they should double glove for all invasive procedures with sharp objects ($P<.001$). Clinical students agreed more strongly with reporting only high-risk needle stick injuries ($P=.057$) and with rationalizations against using UP ($P=.008$). Preclinical students more frequently reported contemplating or preparing to comply with double gloving, wearing protective eyewear, reporting all exposures, and safely disposing of sharps, whereas students with clinical experience were more likely to report compliance. Clinical students also were more likely to report having "no plans" to practice the first three of these precautions ($P<.001$). Differences in knowledge, attitudes, and intentions to comply with UP between students with and without clinical experience may have important implications for the timing and content of interventions designed to improve compliance with UP.

As mentioned earlier in chapter I, Most of Bamrasnaradura patients are infected patients. More than 800 workers are at risk of occupational acquiring infections, so Universal Precautions practices are very important for Bamrasnaradura Institute. Since there is no research about Universal Precautions training conducted earlier by Bamrasnaradura hospital, the researcher would like to conduct a study about factors that affect Universal Precautions in Bamrasnaradura Institute. The results will be use to enhance Universal Precautions practice among healthcare workers in Bamrasnaradura Institute. Factors that have been taken into account in this study were summarized in Figure 2.4.

2.4 Conceptual framework

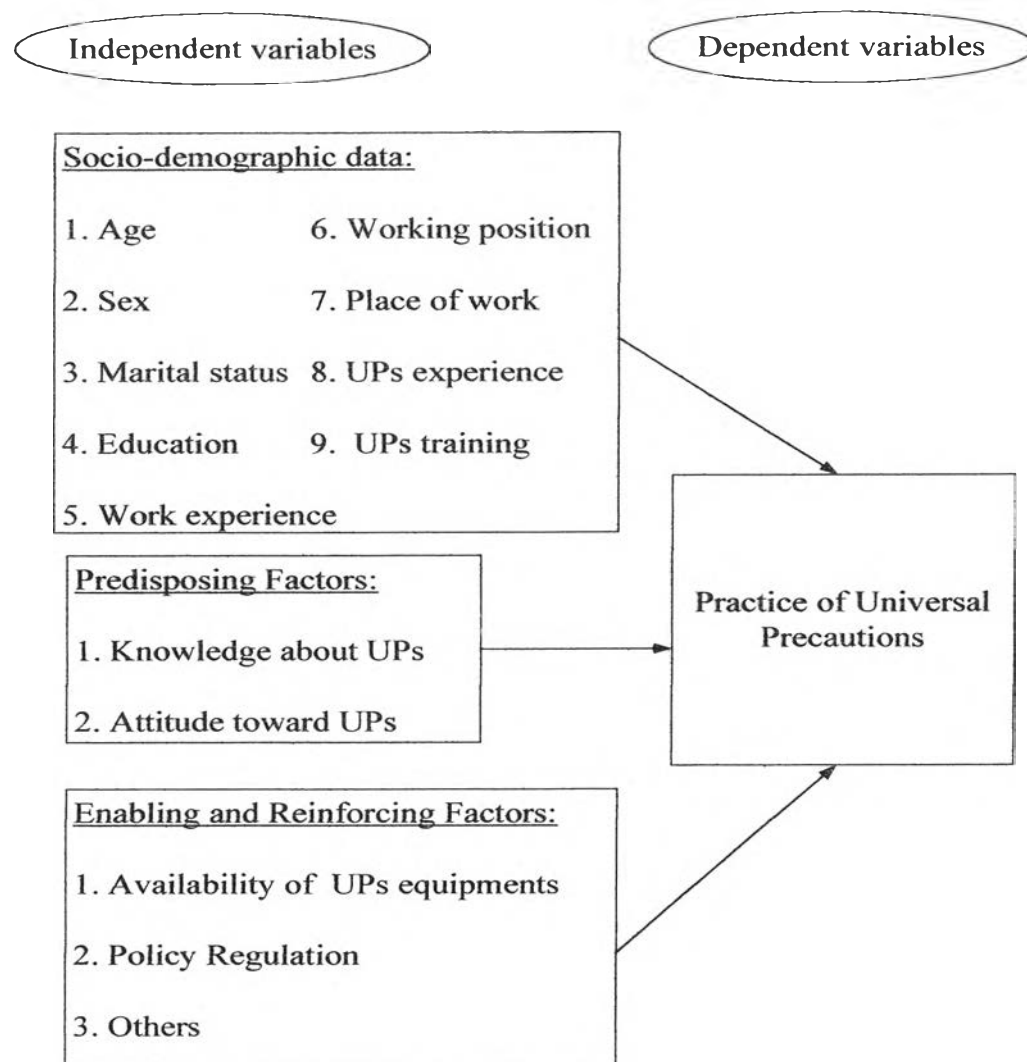


Figure2.4. Conceptual framework of the study