CHAPTER II

LITERATURE REVIEW

The purpose of this study was to identify factors influencing condom use and develop an HIV/AIDS prevention program for MSWs. Contents of reviewing literatures related to concept of the study were presented in 5 parts as follow:

Part I Etiology and epidemiology of HIV/AIDS

Part II Previous HIV/AIDS prevention programs

Part III Health behaviour theories and their applications in HIV/AIDS prevention

Part IV Conceptual framework and hypothesis of phase I

Part V Conceptual framework and hypothesis of phase II

Part I Etiology and epidemiology of HIV/AIDS

Etiology of HIV/AIDS

Acquired immune deficiency syndrome (AIDS) is caused by the human immunodeficiency virus (HIV). HIV/AIDS is most commonly transmitted through sexual intercourse, sharing needles and injection equipment and birth from an infected mother. These methods are marked by the body fluids that exhibit the highest concentrations of HIV-blood, semen, vaginal fluid and breast milk.

I. Sexual contact

The majority of HIV infections are transmitted through unprotected sexual contact between partners with one of who has HIV. The primary mode of HIV infection worldwide is through sexual intercourse, including vaginal, anal and oral sex homosexually and heterosexually (N'Galy & Ryde, 1988; Deschamps et al., 1996). Oral sex has a lower transmission rate, but increases drastically when there are open

sores or blood in the mouth (CDC, 2010). This may occur from something as innocuous as flossing or brushing the gums too hard. For any sexual intercourse, the rate of HIV/AIDS transmission increases with the presence of blood or broken skin, including kissing. Only an open-mouth kiss with blood or broken skin present a minimal risk of HIV transmission, but closed-mouth kissing is risk-free. During a sexual act, only male or female condoms can reduce the chances of HIV and other STD infections and the chances of becoming pregnant. The best evidence to date indicates that typical condom use reduces the risk of heterosexual and homosexual HIV transmission by approximately 80% over the long-term, though the benefit is likely to be higher if condoms are used correctly on every occasion (Cayley, 2004). The male latex condom, if used correctly without oil-based lubricants, is the single most effective available technology to reduce the sexual transmission of HIV and other STDs. Manufacturers recommend that oil-based lubricants such as petroleum jelly, butter, and lard could not used with latex condoms, because they dissolve the latex, making the condoms porous. Water-based lubricants are recommend if necessary. Oil-based lubricants can be used with polyurethane condoms (Cayley, 2004).

Although abstinence from sexual intercourse is the most effective strategy for preventing the sexual transmission of HIV and other STDs, sexual activity is an integral part of everyday life, and most people are unwilling to abstain from sexual activity. Individuals who choose not to abstain from sexual intercourse or who have not been mutually monogamous for a long time can use other method. The most effective and least expensive method to reduce HIV transmission is correct and consistent condom use during sexual contact.

Since unprotected sex is an important factor in HIV transmission in MSWs, harm reduction strategies such as condoms were used in attempts to reduce the infections caused by sexual contact (Kerr et al., 2007; Wodak & Cooney, 2006).

II. Sharing needles and injection equipment

The sharing of HIV- infected injection equipment by drug user results in blood borne HIV transmission. Intravenous drug use is an important factor in HIV transmission in developed countries through the use of unclean or shared needles with

blood on these equipments. While drug use is the most common instance of HIV transmission with needles, it is best to use caution with any activities involving needles or any instrument where blood may such as getting a tattoo or body piercing, acupuncture, sharing household razors (Kerr et al., 2007; Wodak & Cooney, 2006).

III. Mother-to-child transmission

The transmission of HIV from an HIV-positive mother to her child during pregnancy, labor, delivery or breastfeeding is called mother-to-child transmission. The baby may be infected during the pregnancy or during the birth process. After birth, the baby is at risk to transmission if exposed to the breast milk of an HIV/AIDS positive mother. Current recommendations state that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, HIV-infected mothers should avoid breast-feeding their infant. However, if this is not the case, exclusive breast-feeding is recommended during the first months of life and discontinued as soon as possible (WHO, 2006).

Individuals who engage in high-risk behaviours are at significantly higher risks of HIV infection. Such high-risk behaviors include (Cates, Chesney, & Cohen 1997; Latif & Marowa, 1999; Saracco et al., 1993):

- Unprotected sexual activity - unprotected sex is the term used to describe vaginal, anal or oral sex if a condom is not used. HIV and sexually transmitted disease (STD) can be passed on during unprotected sex. Unprotected penetrative (the insertion of the penis into the body of another person) anal and vaginal sex carries the greatest risk of HIV and STD. However, infections can also be transmitted through oral sex (mouth to genitals), and oral-anal sex (mouth to anus).
- Having multiple sexual partners - multiple sexual partners is a high-risk behavior for contracting HIV/AIDS. The more sexual contacts a person has the higher is the probability of having unsafe sex and contracting HIV.
- Having sexual contact with an infected partner - if HIV-positive person uses condoms during sexual activities with HIV is not transmitted to the partner with HIV-negative or are unsure of their HIV status.

- Sharing needles during intravenous drug-use - the virus can be spread through sharing needles, syringes and other body piercing instruments with someone who is infected with HIV. This includes tattoo needles and acupuncture equipments.
- History of STDs - the prevalence of a history of STDs increased with more causal partner choices and earlier age at first sexual intercourse.

Another indicator of high-risk behaviour is the combination of alcohol consumption and engaging in certain unprotected sexual activity (Eich-Hochli et al., 1998; Latif & Marowa, 1999). Several studies show that individuals intoxicated with alcohol are less likely to use condoms (De, 1997; Eich-Hochli et al., 1998; VanLandingham et al., 1997).

Symptoms of AIDS

The symptoms of AIDS are primarily the result of conditions that do not normally develop in individuals with healthy immune systems. Most of these conditions are infections caused by bacteria, viruses, fungi and parasites that are normally controlled by the elements of the immune system that HIV damages. Opportunistic infections are common in people with AIDS (Holmes et al., 2003). HIV affects nearly every organ system. People with AIDS also have an increased risk of developing various cancers, such as Kaposi's sarcoma, cervical cancer and cancers of the immune system, known as lymphomas. Additionally, people with AIDS often have systemic symptoms of infection such as fevers, sweats (particularly at night), swollen glands, chills, weakness, and weight loss (Guss, 1994). The specific opportunistic infections that AIDS patients develop depend in part on the prevalence of these infections in the geographic area in which the patient lives.

Epidemiology of HIV/AIDS

The HIV/AIDS epidemic continues to pose a major public health threat worldwide, especially in the developing world. In 2009, the "Global Summary of the AIDS Epidemic" reported that the number of people living with HIV was 33.3 million, newly infected people with HIV was 2.6 million and the number of

AIDS-related deaths was 1.8 million, with 95% of the new cases found in developing countries (UNAIDS/WHO, 2010).

Today, the highest numbers of HIV/AIDS cases are in sub-Saharan Africa and the Caribbean. In sub-Saharan Africa alone, it is estimated that more than 28 million people are living with HIV/AIDS, with 41% of the adult population (aged 15 to 49) being infected (UNAIDS/WHO, 2010).

In 1984, the first case of HIV/AIDS was identified in Thailand, in a homosexually-active male. In 2008, the number of people living with HIV/AIDS in Thailand was 13,434 and the number of AIDS-related deaths was 1,760 people. In 2009, the number of people living with HIV/AIDS in Thailand was 9,915 people and the number of AIDS-related deaths was 1,369 people. In 2010, the number of people living with HIV/AIDS had declined slightly to 5,058 people and the number of AIDS-related deaths was 673 people (CDC, 2010).

In 2010, the “Ministry of Public Health of Thailand', 'Chiang Mai Provincial Public Health Office”, the U.S. “Centers for Disease Control and Prevention” (CDC) and “Fasrirung Club of Thailand” surveyed the prevalence of HIV/AIDS in Chiang Mai. They reported an overall HIV/AIDS prevalence rate were 21.0 %, 13.0 % and 12.0 % in MSW, MSM, and Trans gendered persons (TG). Keeratikan (2005) reported an increase in the rate of HIV/AIDS infection among MSWs in Chiang Mai, from 12.5 % in 2008, to 15.4 % in 2009 and up to 26.0 % in 2010. The prevalence of HIV/AIDS in MSWs (especially those within the age of 23 to 28 years old) was the highest in Chiang Mai, compared to other province in Thailand. According to a Bangkok study, HIV/AIDS prevalence also increased among MSMs from 24.7% in 2008 to 30.7% in 2010 (CDC, 2010).

Even though HIV/AIDS incidence rates in MSWs have continually increased, HIV/AIDS prevention programs aimed specifically at this group are minimal.

Part II Previous HIV/AIDS prevention programs

In the absence of a cure or vaccine, prevention is the main tool for slowing the rising incidence of new HIV infections. In medical and public health practice two levels of intervention activity have been described (Eaton & Kalichman, 2007). Primary HIV prevention involves changing those behaviors that place an individual

at risk for becoming HIV-infected. This encompasses efforts to reduce HIV transmission risk through sexual or needle-risk behaviors. Scientific and common sense knowledge about the determinants, mediators, and reinforcers of risk behaviours provides the basis for developing a variety of interventions. For example, interventions may seek to change behaviors by increasing knowledge about HIV transmission and prevention techniques, by providing the skills to negotiate safer sex, or by changing beliefs about the social normative and acceptability of risk prevention behaviours such as condom use. Secondary prevention aims to minimise the adverse consequences of HIV seropositivity and maintain quality of life throughout the course of the disease. It also seeks to reduce the transmission of HIV to non-infected persons (e.g., prenatal transmission to infants, or transmission to uninfected sexual partners) and to decrease exposure to additional viral strains in someone already infected (Cate, Chesney & Cohen, 1997).

Types of intervention to reduce risk of HIV infection (Ehrhardt, Exner & Seal, 1997):

1. Interpersonal interventions are conducted with individuals, either one-on-one or in small groups, with the goal of changing an individual's risk behaviour. Interpersonal interventions can be divided further, for example, into information-only, condom skills, relational skills, HIV counselling and testing, and individual risk counselling focuses.

1.1 Information only interventions provide facts about HIV transmission and prevention strategies without any additional behavioural practice of the skills needed to enact risk reduction. Interventions include providing information on condom/spermicide use skills and direct practice of correct condom use with proxy phalluses or practice of spermicidal use with female genital models. Knowing how to use a condom correctly is necessary, for ensuring its use. Interventions that focus on the relational skills necessary for implementing safer sex within a sexual relationship must be considered separately. Such interventions incorporate a variety of direct skills-based techniques, including training and role play of safer sex negotiation, assertiveness and communication skills, and problem-solving about high-risk situations.

1.2 HIV counselling and testing interventions evaluate the impact of this set of

procedures. Enhanced HIV counselling and testing interventions couple standard counselling and testing with condom or relational skills training. Finally, individual risk counselling involves tailoring purely informational interventions to incorporate personal issues or concerns regarding HIV prevention.

2. Institutional interventions seek to affect policies that impact on HIV prevention. Intervention examples include the introduction of safer sex, refusal skills training, mandated HIV curriculum for MSWs, and the routine provision of free condoms. All activities were conducted at the institutional settings.

3. Community interventions target populations (such as commercial sex workers or street injection drug-users) who may not be able or motivated to participate in more formal individualised programs. By reaching a critical mass of individuals with information, motivation, tools for change (such as free condoms), and/or skills training, these interventions seek to alter behaviour by influencing social norms for HIV risk reduction, throughout a given community. Community intervention efforts may take a variety of forms, including condom distribution programs, one-on-one street outreach, or distribution of fliers or other informative materials at key locations. The intervention messages may be delivered by key informants.

4. Mass media interventions involve print, radio, or television HIV prevention campaigns aimed at local, regional, or national mass markets. These interventions seek to change behaviors by providing information and influencing social norms about the acceptability of HIV risk reduction strategies. Examples include subway advertisements promoting condom use, television public service campaigns personalising the threat of HIV and radio spots providing information about HIV counselling and testing locations.

In this study, researchers used a form of intervention to a compatible format, including interpersonal interventions and institutional interventions. The HIV/AIDS prevention program was conducted at the parlour. The activities were operated prior to the starting working hour and focus group discussion was used to share ideas about how to make using condoms more enjoyable.

HIV/AIDS prevention program in Thailand

Thai national HIV/AIDS prevention program, 'The 100% Condom Program' was developed in 1991 and aimed at encouraging individuals to consistently use condoms with commercial sex workers (CSWs). As a result of this program, the rate of condom use with CSWs increased from 61% in 1991 to 92.6% in 1995 (Rojanapithayakorn & Hanenbery, 1996). However, Thailand has experienced a shift from direct and open CSWs to indirect and more covert CSWs. This shift has resulted in a substantial decrease in newly reported official HIV cases. Added to the problem of inaccurate surveillance, there is a misconception that having sex with indirect CSWs is less dangerous than with direct CSWs (Hanenberg & Rojanapithayakorn, 1998). Moreover, men may feel that using condoms during sexual intercourse is useless, unnatural, and not pleasurable. Because of their beliefs and misconceptions, men engage in high-risk behaviors, including having multiple sex partners, taking less care, and inconsistently or never using condoms during sexual intercourse (Hanenberg & Rojanapithayakorn, 1998; Maticka et al., 1997; Poolcharoen, 1998; Rojanapithayakorn & Hanenberg, 1996). For example, Gulton's (1998) study of attitudes towards condom use among homosexual males in Pattaya and Bangkok identified that subjects inconsistently used condoms during anal intercourse with their partners.

Some of the intervention programs already conducted in Thailand includes an HIV prevention program for female commercial sex workers in the south of Thailand. This consisted of an informational and educational campaign and peer educator training. Increase in knowledge and perceived vulnerability in the intervention area was demonstrated but did not translate into a greater increase in condom use (Van Griensven et al., 1995).

A pilot project on AIDS education and intervention trials was conducted among youths in factories in Khon Kaen, North-eastern Thailand. The intervention used media including a combination of videos, cartoons, calendars and brochures. The result showed that most of the people in groups which received the intervention had better knowledge, attitude and behaviour related to AIDS-prevention than groups which had not received the intervention. From post-

intervention discussion groups, it was identified that videos and informational cartoons were of special interest to the study group (Sakondhavat et al., 1998).

Another intervention program, designed for north-eastern Thai villagers, particularly for women was based on principles of behaviour change, social learning theory, and community health promotion. The primary goal was to increase women's risk-reducing activities. Eight of nine outcomes were achieved with in this group, including the significant increase in married women taking initiative in reducing the risk posed to them by the sexual activities of their husbands (Elkins et al., 1997). There was evidence of women changing toward taking more effective actions to decrease HIV transmission in post-program villages. The secondary goal was to increase condom use by men. There was no evidence that the men changed their pattern of condom use.

In Chiang Mai province, Yotruean's study (2006) used the participant action research process to evaluate self-protection activity among female sex workers, against HIV/AIDS. The conclusion of the study was that perceived self-efficacy to AIDS prevention behaviour improved after intervention.

Subsequently, a multifaceted AIDS prevention program among sex workers in Chiang Mai was well received by sex workers and brothel owners. The one-year long intervention, targeting sex workers, brothel owners, and clients, promoted co-operation between these groups and the public health office and established a free condom supply for sex establishments. The intervention included repeated small-group training sessions for sex workers, in which experienced women acted as peer education. The “model brothel” component encouraged all brothels owners to insist on condom use by sex workers and encouraged clients to use condoms. Following the program, 93% of a sub-sample of sex workers refused to have sex without a condom, compared to 42% before the program (Visrutaratna et al., 1995).

HIV/AIDS prevention program for MSWs

HIV/AIDS prevention programs for MSWs have been studied both internationally and in Thailand (Parker, Khan, & Aggleton, 1998). However, it would seem that active programs specifically aimed at MSW's are more prevalent outside Thailand. For example, one such study evaluated the acceptability and comparative

efficacy of “brief HIV risk reduction intervention”. The aim of the brief intervention program was to increase condom use during paid anal sex by street-based male sex workers (Mark et al., 2006). In this study, “brief intervention” was facilitated by a moderator and conducted in two one-hour sessions in small group meeting format. Intervention efficacy was assessed across two brief interventions; a “standard” and a “standard-plus” intervention. It was found that there were no significant differences between the “standard” and the “standard-plus” brief interventions, but condom use during paid anal sex did increase at post-intervention.

The standard intervention was composed of the elements outlined by the Centres for Disease Control and Prevention's HIV risk-reduction intervention. The first session was to provide general information about HIV and specific information on HIV transmission through sexual actions and needle use. The second session, conducted one week after the first provided information on sexual and needle-use risk avoidance, and demonstration of condom use techniques. The standard-plus intervention consisted of the information and skills in the standard intervention, plus elements designed for enhancing the factors influencing condom use based on elements of the theory.

Pearlman et al. (2002) evaluated the impact of a community-based HIV/AIDS peer-leadership prevention program on peer leaders and youth newly enrolled as peer educators for one or more years. The study found that over a 9-month period, newly enrolled peer-leaders had significantly higher awareness of HIV/AIDS knowledge and self-perception in making changes.

In Thailand, the government has emphasised its focus on reducing the incidence of HIV/AIDS in female sex workers. In contrast, programs focused on MSWs, who are at a very high risk of HIV/AIDS infection, were neglected (Chan et al., 1998; Muecke, 1992; Parker, Khan, & Aggleton, 1998). HIV/AIDS prevention programs focused specifically on MSWs are limited (Beyrer, et al., 1997; Kunawararak et al., 1995). Government and non-governmental agencies have to be responsible for the operational activity specific studies into HIV/AIDS prevention programs for MSWs.

One of a few known HIV/AIDS prevention programs already conducted for MSWs in Chiang Mai Province was called the “Life Skills Program” developed by

Mplus. The content of the "Life Skills Program" focused on sexually transmitted disease prevention, especially among MSWs.

Although the objective of these various programs was to reduce the incidence rate of HIV/AIDS, there were several limitations. They were not developed based on any health behavior theories, nor were their impacts properly evaluated. It was claimed that almost all successful HIV/AIDS prevention activities were developed and conducted based on health behavior theories (Kaljee et al., 2005). Therefore, effective interventions should be developed based on any health behavior theories and evidence about the specific determinants of risk behaviors (Kaljee et al., 2005).

Part III Health behaviour theories and their applications in HIV/AIDS prevention

Theories of behavior change have been used effectively to guide the development and implementation of HIV risk-reduction interventions. Basically, a theory is a set of interrelated propositions containing constructs that describe, explain, predict, or control behavior (Fisher, Fisher & Rye, 1995). Theories vary in the extent to which they have been conceptually developed and empirically tested. Most theories are multi-factorial; that is, they are based on a number of constructs, for example, self-efficacy, perceived peer norms, power imbalances in relationships, and perceived risk of HIV/sexually transmitted disease (STD) infection. Constructs are the building blocks of theory and usually can only be understood within the context of a specified theory. When the relationships between constructs are defined, the theory provides a road map for understanding behavior and how social and behavioral interventions may be used to modify HIV risk behaviors (Fishbein & Ajzen, 1975).

Having this road map of relationships between constructs that influence behaviours can result in more effective programs being designed, as it leads planners to focus on those influential factors that need to be addressed to achieve behavioral change. Without a theoretical foundation, programs sometimes focus on factors that are not the most important or the sole determinants of behavior (e.g., concentrating only on increasing knowledge rather than also addressing social constraints to adopting the desired behaviour). Alternatively, they may correctly

identify factors promoting high-risk behaviours but may adopt strategies to influence them that are not particularly effective (e.g., simply didactically teaching women about how to negotiate condom use without giving them the opportunity to practice those skills in skills-based learning sessions). Those responsible for the formulation of a theory, as well as other adherents of the theory, typically provide guidance on strategies to effectively address those factors the theory identifies as being important influences on behaviour. Those strategies, however, do need to be tailored to specific contexts. Further, in adopting a theoretical framework in a given context, program planners may find that no one theory is appropriate in its entirety and that constructs from more than one theory must be combined.

While no single psychosocial theory dominates the field of HIV prevention, perhaps the most widely used theory in the field is the social cognitive theory. There is also a relatively new theoretical model that may be particularly relevant for designing interventions that target homosexual groups. Such theories offer a framework for interventionists who wish to design prevention interventions.

AIDS Behavioural Theories (ABTs)

There were numerous individual levels of ABTs in literature. They include health behaviour theories such as the 'Health Belief Model' (Janz & Becker, 1984), the 'Theory of Reasoned Action' (Fishbein & Ajzen, 1975), the 'Theory of Planned Behaviour' (Ajzen & Madden, 1986), 'Social Cognitive Theory' (Bandura, 1997), the 'Transtheoretical Model' (Prochaska & DiClement, 1983), the 'Protection Motivation Theory' (Roger, 1975), the 'Extended Parallel Process Model' (Witte, 1992) and the 'Precaution Adoption Process Model' (Weinstein,1988). Two additional theories developed specifically to understand HIV risk behaviour are the 'AIDS Risk Reduction Model' (Catania et al., 1990) and the 'Information-Motivation-Behavioural Skills Model' (Fisher & Fisher, 1992).

In this chapter, the researcher reviewed the ARRM which was used in this study. This research aimed to study the factors affecting condom use behavior of MSWs. The details of ARRM were described as follows.

AIDS Risk Reduction Model (ARRM)

ARRM focuses on social and psychological factors hypothesized to influence (1) labeling of high risk behaviors as problematic, (2) making a commitment to changing high risk behaviors, and (3) seeking and enacting solutions directed at reducing high risk activities. The proposed model integrates important concepts from prior behavioral medicine and human sexuality studies, specifies their differential import to achieving the goals associated with each stage of the model, and denotes factors hypothesized to influence people's motivation to continue the change process over time. The ARRM combines many of the perceptual and attitudinal factors represented in other social cognitive theories of behaviour change. These include 'Social Cognitive Theory' (Bandura, 1997), 'Health Belief Model' (Becker &Janz, 1984; Rosenstock, 1990), and 'Theory of Reasoned Action' (Ajzen, 1991; Ajzen & Fishbein, 1975)

Social Cognitive Theory (SCT) (Bandura, 1997)

The social cognitive theory explains how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies (Bandura, 1997). Evaluating behavioral change depends on the factors environment, people and behavior. SCT provides a framework for designing, implementing and evaluating programs.

Environment refers to the factors that can affect a person’s behavior. There are social and physical environments. Social environment include family members, friends and colleagues. Physical environment is the size of a room, the ambient temperature or the availability of certain foods. Environment and situation provide the framework for understanding behavior (Parraga, 1990). The situation refers to the cognitive or mental representations of the environment that may affect a person’s behavior. The situation is a person’s perception of the lace, time, physical features and activity (Glanz et al, 2002). The three factors environment, people and behavior constantly influence each other. Behavior is not simply the result of the environment and the person, just as the environment is not simply the result of the person and behavior (Glanz et al, 2002). The environment provides models for behavior.

Observational learning occurs when a person watches the actions of another person and the reinforcements that the person receives (Bandura, 1997). The concept of behavior can be viewed in many ways. Behavioral capability means that if a person is to perform a behavior he must know what the behavior is and have the skills to perform it.

Wiggers, Wit, Gras, Coutinho & Hoek (2003) study risk behavior and social-cognitive determinants of condom use among ethnic minority communities in Amsterdam. The study found that subjective norm and perceived behavioral control regarding condom use were independent social cognitive determinants of consistent condom use in the studied population.

Health Belief Model (HBM) (Becker & Janz, 1984; Rosenstock, 1990)

The HBM was initially used in investigations of compliance with public health programs, such as immunisations and tuberculosis screening (Becker & Janz, 1984; Rosenstock, 1994, 1974). Four components are included in the model: perceived susceptibility to a health threat, perceived severity of a threat, perceived benefits of behaviour change, and perceived barriers to behaviour change. In addition, internal or external cues to action (e.g, symptom perception and public health message) and the level of available social support are important factors in determining the likelihood for the actions.

In a later conceptualisation of the model (Rosenstock, Strecher & Becker, 1994) and in keeping with the emerging view of the importance of self-efficacy in models of health behaviour, self-efficacy was included as a predictive factor in the HBM. Despite inclusion in the model of components represented in many existing models of health behaviour change, Armitage & Conner (2001) summarised current criticisms of the model as being related to poor dentition of the constructs, lack of combinatorial rules, and lack of evidence for discriminate validity between HBM components and components described in other models.

Thato, Charron, Dorn, Albrecht & Stone (2003) describes the prevalence of premarital sexual behaviour and condom use, and to identify predictors of condom use using the expanded health belief model (EHBM) among vocational students in Bangkok, Thailand. A cross-sectional analytical design was used with

a cluster-based sample of 425 students aged 18 to 22 years from eight randomly selected private vocational schools in Bangkok. Anonymous self-report questionnaires were used to collect the data. The predictive model of condom use consisted of perceived benefits from using condoms; interactions between intention to use condoms and gender knowledge of STDs, HIV, AIDS, pregnancy and peer norms; and alcohol use and age. It was found that overall, 49.9% of participants were sexually active, 64.8% of men and 32% of women. Of the sexually active participants, only 6.3% reported using condoms every time when having sex in the beginning of the relationship, and 10.2% during the last few times. Twenty four percent of sexually active participants had unplanned pregnancies and 7% contacted sexually transmitted diseases (STDs).

Selvan et al. (2001) studied intended-sexual and condom behaviour patterns among teenage higher secondary school students in India. To achieve this, variables including perceived norms, perceived peer group norms, risk behavior patterns, perceived chances of getting AIDS and relevant socio-demographic variables were regressed on intended sexual behaviors. Regression of the actual sexual behavior was carried out with perceived norms, perceived peer group norms and intended sexual behaviour as the independent variables. A conceptual model has been framed based on the theory of reasoned action, health belief model and self-efficacy theory. Cumulative scores were computed for perceived norms, perceived peer group norms, risk behaviour patterns, opinion on handling condoms and perceived chances of getting AIDS. Along with these variables, possible confounding variables such as age, gender, type of family, mother's education and father's education were considered for their effects on intended sexual and condom behavior. The study found that perceived norms and perceived peer group norms were significantly associated with intended sexual behavior and actual sexual behavior.

Sheeran et al. (1999) suggest that the main limitation of the HBM is that it is not able to specify the way in which beliefs are changed into action. This is, however, addressed by the Theory of Reasoned Action.

The Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975)

TRA tackles the issue of how beliefs are changed into action. The theory suggests that the formation of a behavioral intention (such as an individual intending to use a condom when they have sex with a new partner) is the factor immediately before the action and mediates the influence of other variables. In this theory the individual's attitudes (based on their perceived susceptibility, severity, benefits and barriers) and their subjective norms (the individual's beliefs about what others think they should do and their desire to comply with these views) are considered prerequisites to forming their behavioural intention (Fishbein and Ajzen, 1975).

One critical element of the TRA, assigned in the ARRM is self-efficacy. The 'perceived susceptibility' element of the TRA was also assigned to the ARRM. The ARRM was the first attempt to combine a decision-making model and a theoretical framework developed specifically to account for HIV-preventative behavior. The ARRM identifies three main stages in the process that an individual goes through when changing their condom use behavior (Catania, et al., 1990).

Stages

The ARRM identifies 3 stages that could also be applied to the development of HIV/AIDS prevention programs for MSWs:

Stage 1 - Labelling

The recognition and labelling of sexual and health behavior is high risk. It involves several variables:

- Knowledge of sexual activities associated with HIV transmission.
- Believed personal susceptibility to contracting AIDS (identified as 'perceived susceptibility to HIV', in the HBM. For example, how likely one believes they will get a STD).
- Belief that having AIDS is undesirable (identified as 'perceived severity' in the HBM. For example, how threatening they find the thought of getting an STD).
- Social norms and networking (whether the individual was taught about HIV/AIDS at gay bars and gay massage parlour, media AIDS campaigns, knowing someone with HIV/AIDS). HIV/AIDS prevention programs could

play a key role at this stage by discussing with subjects how STD infection occurs, the likelihood of contracting a STD, and the risks that STD pose to health.

Stage 2 - Commitment

This is the decision-making stages that lead to a commitment to use condoms during sexual intercourse. This stage is subject to several variables:

- Efficacy (an individual's belief about the efficacy of condom use to prevent HIV infection).
- Attitudes and beliefs about condoms (an individual's positive or negative evaluation of what it would be like to use condoms).
- Self-efficacy (an individual's belief about their ability to prevent HIV infection).
- Partner's attitudes to condoms (an individual's perception of their partner's attitudes towards condom use).
- Interpersonal consequences (an individual's beliefs about the likelihood that suggesting condom use would offend their sexual partner or negatively affect their reputation).
- Social influence variables (an individual's perceptions of social pressure from significant others to use or not to use a condom).

HIV/AIDS prevention programs could encourage individual subjects to move through this stage by discussing their attitudes and beliefs about condoms and how comfortable they feel about using condoms to prevent AIDS and STD infection. Recent studies, such as; Di et al. (2004) have established the efficacy of using video interventions, modelling a socially positive view of condoms that relates to a more positive attitude towards condom use.

Stage 3 - Enactment

The action stage is composed of three phases: seeking information, obtaining remedies, and enacting solutions. Depending on the individual, phases may occur concurrently or some may be missed out. Variables at this stage:

- Measures of preparatory behaviour (carrying a condom, condoms being available);
- Interpersonal variables (how individuals characterise their sexual partners, for example casual or long-term);
- Social networks and problem solving choices (self-help, informal and formal advice);
- Ability to communicate verbally with a sexual partner (about STD and HIV and about condom use);
- Sexual partner's beliefs and behaviors.

At this stage HIV/AIDS prevention programs could play a key role in providing subjects with information and assistance with making problem-solving choices. The enactment stage in the ARRM involves an important shift from considering people in isolation to considering the individual as part of a dyadic relationship (Flowers, Sheeran, Beail & Smith, 1997).

Progression from this stage is crucial, as the ARRM hypothesises that MSWs may reach the commitment stage for condom use, but fail to enact the behaviour if they feel unable to discuss the issue with their sexual partners, or believe that their partners or social networks have negative beliefs about condom use. Overall, one of the most important predictors of condom use is communication about condoms (Sheeran et al., 1999).

An acknowledged limitation of many of the decision-making models is that they focus on the individual and do not sufficiently acknowledge the social nature of condom use. A complete review of the ARRM and its implications appears in Longshore, Anglin & Hsieh (1994).

Progression through ARRM stages is dependent on the influence of several psychosocial factors. For example, knowledge regarding the routes of HIV transmission, symptoms and outcomes is assigned in the ARRM as a factor influencing the Stage 1 end point, i.e., perceived infection risks. A self-efficacy factor is assigned as a crucial predictor of intention to change at Stage 2 (Bandura, 1997; Murphy et al., 2001) as well as actual behaviour change at Stage 3. Finally, some ARRM factors are not stage-specific but instead are considered to be motivators of movement across stages. These include peer norms regarding risk-

taking behaviour and cues to action such as information from an HIV education program.

The ARRM offers two important advantages. First, as a synthesis of other models, it reflects the accumulated wisdom regarding many domains of health behaviour. Second, the ARRM was formulated as a framework for research specifically on HIV risk behaviour (Catania, Kegeles & Coates, 1990).

Longshore et al., 1998 studies using the ARRM as a conceptual framework, conducted a multivariate prospective test of psychosocial antecedents of unprotected sex by 155 female and 134 male heterosexual injection drug users. It found that for both women and men, stronger intentions to use condoms predicted subsequent reductions in unprotected sex. For women, but not men, higher perceived self-efficacy also led to reductions in unprotected sex. They suggest that explicit formation of risk-reduction intentions is an important antecedent to sexual behaviour change by drug users of either gender and that change by drug-using women is also influenced by their perceived control over sexual risk-taking.

Longshore, Stein & Conner (2004) used the ARRM to test a stage-based longitudinal structural equation model of the impact of intention to reduce injection risk behaviour on subsequent behaviour change, in a sample of 294 HIV-negative opiate-addicted individuals in treatment. It was found that intended risk reduction and continuous participation in treatment significantly predicted less injection risk behaviour. Greater self-efficacy, less baseline risk behaviour, less perceived susceptibility to AIDS, and greater fear of AIDS, predicted intention to reduce risk.

Part IV Conceptual framework phase I

The study framework was shown in figure 1. The framework was developed based on the ARRM. It identifies the demographic and psychosocial factors that influence subject's 'intention to use condoms' and condom use behavior when participating in vaginal, anal and oral sex. The researcher selected some variable of ARRM which were identified that were significantly associated with condom use behavior in study of Longshore, Anglin & Hsieh (1994); Longshore et al. (1998) and Longshore, Stein & Conner (2004).

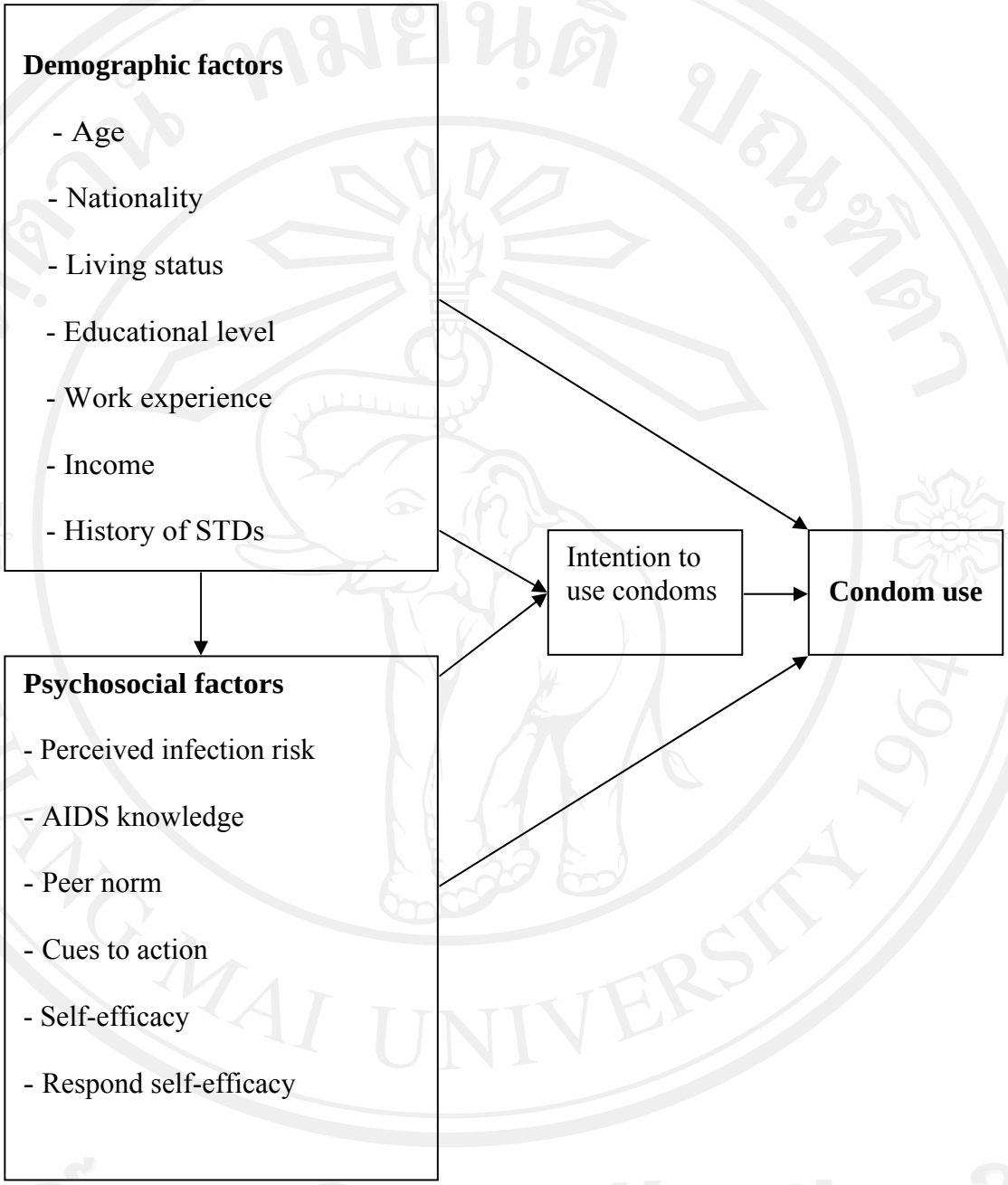

Figure 1: Conceptual framework for predicting condom use among male sex workers

Hypotheses phase I

H1: There is a correlation between condom use and demographic and psychosocial factors**.**

H2: There is a correlation between 'intention to use condoms' and demographic and psychosocial factors.

Part V Conceptual framework phase II

The researcher expected to study whether the HIV/AIDS prevention program was effective in improving AIDS knowledge, perceive infection risk, peer norm, attitude towards condom use, perceived self-efficacy, intention to use condoms and condom use. The following figure represents the conceptual framework of Phase II of the study:

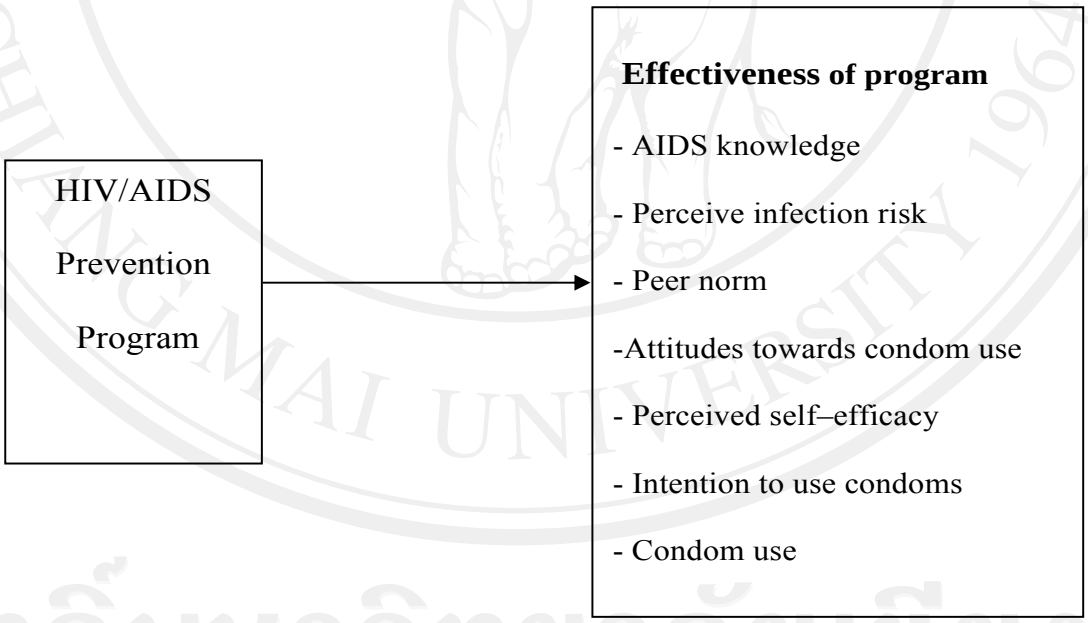

Figure 2: Research framework of the effectiveness of HIV/AIDS prevention program

Hypotheses of phase II

H1: Mean score of AIDS knowledge, perceived infection risk, peer norm, attitudes toward condom use and perceived self–efficacy will be significantly increased at immediately after intervention and thereafter, at one-month and three months, compared to the scores at baseline.

H2: The proportion of intention to use condoms and condom use will be significantly increased at immediately after intervention and thereafter, at one-month and three months post intervention, compared to the scores at baseline.