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Condom use among HIV -positive Thai men.

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CONDOM USE AMONG HIV-POSITIVE THAI MEN

by

KHEMARADEE MASINGBOON

A DISSERTATION

Submitted to the graduate faculty of the University of Alabama at Birmingham
in partial fulfillment of the requirements for the degree of
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ABSTRACT OF DISSERTATION
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Guided by the Transtheoretical Model of Behavioral Change (TMC), the purposes of the study were (a) to determine stages of change for condom use during sexual contact with both primary and casual partners among HIV-positive Thai men in eastern Thailand; (b) to characterize pattern of self-efficacy, pro, and con scores across stages of change; and (c) to identify predictors of stages of change for condom use among HIV-positive Thai men with primary and casual partners.

221 HIV-positive Thai men were recruited from outpatient clinics of four regional hospitals located in eastern Thailand. The questionnaires used to obtain data consisted of a demographic characteristics section, personal behavior form, the stage of change algorithm for condom use questionnaire, Decisional Balance for Condom Use, and Self-Efficacy for Condom Use questionnaire. Data were analyzed using descriptive statistics, ANOVA, MANOVA, discriminant analysis, and logistic regression analysis.

The findings indicated that during vaginal intercourse with primary and casual partners, 50% of HIV-positive Thai men were in action and maintenance stages of change for condom use and 27% were in the preparation stage. During anal intercourse, 70% were in the early stages of change with primary and casual partners.

The pattern of self-efficacy, pro, and con scores were consistent with the TMC. Self-efficacy and pro scores were lowest among HIV-positive men who were in the precontemplation stage, and highest among those in the maintenance stage. However, there was no significant difference of con scores across stage of change for condom use.

For condom use during vaginal intercourse with primary partners, self-efficacy was the best predictor in predicting individuals in the maintenance stage. With casual partners, the pros of condom use was the most accurate variable in predicting individuals in the precontemplation stage.

The TMC is useful in assessing individuals' intention and readiness to adopt consistent condom use behavior. The findings provide important information in developing condom use promotion and HIV prevention programs.

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CHAPTER 1

INTRODUCTION

This chapter presents the background and significance of the study. This chapter is organized as follows: background and significance of the study, conceptual framework, definition of terms, research questions, and summary.

Since the HIV/AIDS epidemic was recognized in the United States in 1981, HIV cases have occurred in virtually every area in the world. By the end of 2001, the number of people living with HIV/AIDS worldwide was estimated at 40 million, and the number of newly infected people was reported to be 5 million (Joint United Nations Programme on HIV/AIDS, World Health Organization [UNAIDS/WHO], 2001). Ninety-five percent of all HIV-infected people live in the developing world. Most of these people live in Sub-Saharan Africa (28.1 million), and approximately 6.1 million live in South and Southeast Asia.

In Thailand, a country located in Southeast Asia with a population of 62 million, the number of HIV-infected people is about 1 million. That means 1 in 62 Thais is infected with HIV (UNAIDS/WHO, 2001). The number of those who developed AIDS was 179,057 cases, and the number of AIDS-related deaths was 49,412 cases; 135,544 of them were men (Division of Epidemiology, Ministry of Public Health, Thailand, 2001). Most of these people were aged 25 to 39 years old; they were working for a living to take care their families. Phenomena such as premature death, increase in the number of or-

phans, and escalating health care costs to the health care delivery system services are a few of the variables associated with this epidemic.

Globally, the major route of HIV transmission is through sexual contact; this is also true in Thailand (Holmberg, 1996; Mann & Tarantola, 1996; Nelson, 1998; Poolcharoen, 1998; Surasiengsunk, 1998; UNAIDS/WHO, 2001). Although educational strategies have been used to promote HIV prevention, people continue to engage in high-risk behaviors, especially unprotected sex that is not mutually monogamous. Safer sex, particularly condom use, is promoted as one of the most effective ways to prevent and reduce HIV transmission (Cantania et al., 1993; Centers for Disease Control and Prevention [CDC], 1997; Coates, 1990). Many studies have shown that proper condom use during sexual intercourse can reduce HIV transmission 70% to 95% (Davis & Weller, 1999; Pinkerton & Abramson, 1997; Roper, Peterson, & Curran, 1993). In geographical areas where intervention programs have been conducted to reduce high-risk behaviors and promote condom use, the prevalence rate of HIV infection has been reduced.

In Thailand, a Thai national HIV 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 (Hanenberg & Rojanapithayakorn, 1996). However, Thailand has experienced a shift from direct and open CSWs to indirect and more clandestine CSWs. This shift has resulted in a substantial decrease in newly reported official 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 behavior, including having multiple sex partners, taking less care, and inconsistently or never using condoms during sexual intercourse (Hanenberg & Rojanapithayakorn, 1998; Maticka-Tyndale et al., 1997; Poolcharoen, 1998; Rojanapithayakorn & Hanenberg, 1996). For example, Gulton (1998) tested gay men in Pattaya and Bangkok and reported that those subjects had inconsistently used condoms during anal intercourse with their partners. Other investigators reported that both unmarried and married men had inconsistently used condoms during visiting direct and indirect CSWs. Then, later, the men had sexual intercourse with their partners, especially their regular partners, without using condoms (Knodel, 1995; Tut, 1997; Wuthiwan, 1989). Some of those men who have unprotected sex may have been HIV positive, and that put their partners at risk for HIV infection, resulting in increasing numbers of new cases of HIV infection in Thailand.

Another reason of the increase in HIV/AIDS prevalence is the treatment-associated increases in survival of persons diagnosed with AIDS. As the result of antiretroviral therapy, people who have access to this combination medication are reported to have increased life spans, although they remain HIV infected and infectious. Unfortunately, there is evidence that life-prolonging therapy may lead to complacency about the dangers of HIV, which, in turn, can lead to high-risk sexual behaviors (AIDS Alert, 1999; UNAIDS/WHO, 1999). For example, in 1994 in San Francisco, an investigator reported that over one third of gay men had unprotected anal intercourse, and those among this group not using condoms increased by half over 3 years (UNAIDS/WHO, 1999). Recent research has shown that gay men are " becoming complacent" about the disease because

of the success of pharmaceutical treatment. It is reported that HIV-positive men who had higher levels of satisfaction about the drugs that were prescribed for them, and they reported having unprotected sex with a greater number of partners (Murphy, 1998; AIDS Alert, 1999). Thus, they can pass on the virus to their partners if they have unprotected sex.

At present, in Thailand, the number of HIV-positive people who access to antiretroviral therapy is increased; thus, they can live longer with the combination of those drugs. These people may become complacent about the disease and the treatment as it occurs in the United States. Furthermore, if they still engage in high-risk behavior, especially inconsistent condom use, they can pass on virus to their partners, resulting in the spread of HIV transmission.

In addition, consistent condom use is not the usual practice of most sexually active individuals, and the lack of condom use or improper condom use is reflected in the fact that the incidence of sexually transmitted diseases (STDs) and HIV infection increases every day. Therefore, encouraging individuals to change high-risk sexual behaviors is complicated; knowledge about HIV and its transmission is not enough to change the high-risk sexual behaviors (CDC, 1996; Fishbein & Guinan, 1996; Grimley, Prochaska, Velicer, & Prochaska, 1995). Some investigators have reported that knowledge about HIV transmission only delays the initiation of having sex and reduces the number of sexual partners (Guenther-Grey, Noroian, Fonseka, & Higgins, 1996; Kirby et al., 1994). Although many intervention programs have been conducted to promote condom use, subsegments findings indicate that subjects still inconsistently use condoms (Ford, Wirawan, & Fajans, 1998; Grimley et al., 1996; Poolcharoen, 1998). From a theoretical-

stand point, to change high-risk behaviors, individuals must be ready to change with intention to change and must employ cognitive-behavioral strategies to change (Prochaska & DiClemente, 1984).

As can be surmised by the preceding discussion, further evaluation of condom use among HIV-positive Thai men is needed. It is important to identify variables associated with condom use as well as the readiness among these individuals to change their unsafe sexual behavior.

Purposes of the Study

The overall purpose of this study is to establish the proportion of condom use among HIV-positive Thai men who live in eastern Thailand. A second goal of the study is to apply the Transtheoretical Model of Behavior Change (TMC) by (a) determining stages of change for condom use among the subjects; (b) determining the distribution of self-efficacy, and pro and con scores of participants across stages of change; (c) characterizing the relationships between stages of changes for condom use, decisional balance, and self-efficacy scores; and (d) identifying predictors of stages of change for condom use.

Research Questions

The research questions for this study are as follows:

1. What is the proportion of condom use during sexual contact among HIV-positive Thai men in eastern Thailand with primary and casual partners?

2 What are the stages of changes for condom use during sexual contact among HIV-positive Thai men in eastern Thailand with primary and casual partners?

3. Are the pattern of self-efficacy, and pro and con scores by stages of change consistent with the TMC?

4. What are differences in self-efficacy, and pro and con scores among stages of change for condom use?

5. Which of these variables are the best predictors for stages of change for condom use: decisional balance (pros and cons), self-efficacy, age, alcohol use, drug use, and disclosure of HIV status?

Conceptual Framework

The conceptual framework used to guide this study is the TMC (Prochaska & DiClemente, 1984). This model provides a guide to understanding factors related to behavior change, to evaluate individuals' readiness to change, and to promote behavior change. The core constructs of the TMC are stages of change, processes of change, decisional balance, and self-efficacy.

Stages of Change

Stages of change represent a continuum of motivational readiness for behavior change. Behavior change is viewed as a process that unfolds over time through the sequence of five stages of change: precontemplation, contemplation, preparation, action, and maintenance.

Precontemplation. Precontemplation is the stage at which there is no intention to change behavior in the future, or usually defined as some time in the next 6 months. Individuals can be in the precontemplation stage for a variety of reasons: they may be uninformed or underinformed about the consequences of their behavior, or they may have tried to change many times but become demoralized about their abilities to change, or they may simply be resistant to change. The precontemplators tend to avoid reading, talking, or thinking about their high-risk behavior. Moreover, they are less open to significant others about their problems, and they do little to shift their attention or their environment in the direction of overcoming problems. Thus, precontemplation is the most stable stage among the five stages of change (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997).

Contemplation. Contemplation is the stage in which people are aware that a problem exists and are seriously thinking about overcoming or changing it within the next 6 months but have not yet made a commitment to take action. Individuals in the contemplation stage are more aware of the benefits of change but are also aware of the costs. Thus, they are ambivalent about costs and benefits of their behavior, which keeps them stuck in this stage for a long period of time (Prochaska & DiClimente, 1984; Prochaska, Norcross, & DiClimente, 1994; Prochaska & Velicer, 1997).

Preparation. Preparation is the stage that combines intention and behavioral criteria. Individuals in this stage are intending to take action in the next month. They have taken some actions to change their high-risk behavior in the past year but fail to continue

those actions. Individuals in this stage view the costs and benefits of changing their behavior as more pro than con, but they may have some doubts about their ability to engage in the new behavior. Indeed, preparation is a transitional stage rather than a stable stage in which individuals make a decision to take action to overcome the high-risk behavior (Prochaska & DiClimente, 1984; Grimley, Prochaska, Velicer, Blais, & DiClimente, 1995).

Action. Action is the stage in which individuals modify their behaviors, experiences, or environment in order to overcome their problems. Individuals have made overt behavior change and have a commitment to engage in behavior change in the past 6 months. At this stage, an action criterion of behavioral change, which varies depending on the behavior, must be set, and it must be sufficient to reduce risks of disease. Action is the least stable of the stages and carries the highest risks for relapse (Prochaska et al., 1992; Prochaska & Velicer, 1997).

Maintenance. Maintenance is the stage in which people work to prevent relapse and to consolidate the gains attained during action, ranging from 6 months to about 1 year. At this stage, relapse is less likely to occur, and individuals are increasingly more confident that they can continue and sustain their change (Prochaska et al., 1992; Prochaska & Velicer, 1997).

To change behavior, people move across stages from precontemplation (not intending to change) to contemplation (intending to change) to preparation (actively planning to change) to action (making changes) and to maintenance (taking steps to sustain

change and resist temptation to relapse). However, progression through the stages is not often linear, but more spiral or cyclical; regression from the later stage of action or maintenance stage to an earlier stage can occur. For health behavior problems or addictive behaviors, relapse usually occurs; most people return to the contemplation stages of change before they succeed to the maintenance stage (Prochaska & DiClemente, 1984; Prochaska, Redding, Harlow, Rossi, & Velicer, 1994).

Processes of Change

The processes of change represent coping activities, the overt and covert strategies, used to modify problem behaviors during stages of change (Prochaska & DiClemente, 1984). The 10 processes of change are used differently to move individuals from stage to stage. They are categorized into two groups: experiential processes and behavioral processes. The experiential processes involve more cognitive, affective, and evaluative processes or focus on the internal experiences of individuals. The experiential processes include consciousness raising, dramatic relief, environment reevaluation, self-reevaluation, and self-liberation. The behavioral processes are overt activities or are behavioral in nature, including contingency management, helping relationship, counterconditioning, and stimulus control. In the early stages, individuals apply experiential processes to progress through the stages by raising awareness of problem behaviors and evaluating effects of problem behaviors to themselves and others. In the later stages, the behavioral processes are applied to help individuals progress toward maintenance or termination of the behavior. Those behavioral processes are useful to enhance self-efficacy of individuals to perform and sustain the new healthy behavior.

Decisional Balance

Decisional balance is another concept that was added to the TMC by the work of Velicer and colleagues (1985). This concept relied on Janis and Mann's (1977) model of decision making that includes four categories of pros--benefits for self and others, and approval by self and others--and four categories of cons; detriments to self and others and disapproval from self and others.

The decisional balance construct represents the cognitive and motivational aspects by which individuals weigh the pros (advantages) and cons (disadvantages) of changing behavior (Grimley, Prochaska, Velicer, Blais et al., 1995). The balance between pros and cons varies depending on which stage of change an individual is in. Research based on the TMC has shown that during the early stages, particularly the precontemplation stage, the cons of changing are higher than the pros. On the other hand, the pros of changing always outweigh the cons in action and maintenance stages (Prochaska & DiClemente, 1984; Prochaska, Norcross et al., 1994; Prochaska & Velicer, 1997). Therefore, to progress from precontemplation to contemplation, the pros of changing must increase. To progress from contemplation to action, the cons must decrease. The crossover of the pros and cons always occurs before individuals take action, which is during the contemplation or preparation stage. In addition, the pros and cons of the decisional balance construct are important predictors of the progress between the earlier stages of precontemplation, contemplation, and preparation. However, they are less important as predictors during the action and maintenance stage. During those stages, it is found that the self-efficacy construct plays an important role to move individuals from the action to the maintenance stage.

Self-efficacy

Self-efficacy, another construct included in the TMC, was proposed by Bandura (1977, 1986). Self-efficacy is viewed as an important mediator between knowledge and action; it was defined as a person's perceived ability to accomplish the task (Bandura, 1986). Individuals who have high self-efficacy will expect positive outcome with behavior changes, whereas those who have low self-efficacy will have negative outcome with behavior changes.

Within the TMC, self-efficacy is operationalized in two ways: (a) confidence represents a specific situation that individuals can change the problem behavior and (b) temptation represents the intensity of how tempted individuals are to engage in problem behavior when in difficult situations (Prochaska, Redding et al., 1994; Prochaska & Velicer, 1997). Across the stages of change, self-efficacy scores increase from precontemplation to maintenance. The lowest scores of self-efficacy are reported in the precontemplation stage, and the highest scores are reported in the action and maintenance stages. However, low self-efficacy scores in the precontemplators are difficult to interpret because the low scores can reflect both perceived inability and unwillingness to change (Grimley, Prochaska, Velicer, Blais et al., 1995). In the action stage, individuals can assess ability and confidence more directly. In contrast to confidence, temptation scores decrease gradually from precontemplation to maintenance; the lowest scores are reported in the maintenance stage. In addition, self-efficacy is an important predictor of stage movement into action and maintenance stage.

According to the TMC (Prochaska & DiClemente, 1984), to move from stage to stage, individuals use different processes of change and weigh the advantages and disad-

vantages of health behaviors differently. The individuals' self-efficacy in performing the health behaviors is also different based on their decisional balance regarding those health behaviors. In addition, transitions between stages of change are affected by the processes of change, decisional balance, and self-efficacy.

Conceptual Framework of the Study

As described conceptually by the TMC, individuals move across stages of change based upon their weighing of the pros and cons of decisional balance and their perceived self-efficacy, and the processes of change will be used to change unhealthy behavior. For HIV prevention, abstinence is the best strategy to prevent HIV transmission. However, because few people are willing to maintain abstinence over long periods; consistent condom use is another effective strategy to prevent HIV transmission. As described by the TMC, individuals will move across stages of change for condom use based upon their weighing of the pros and cons of decisional balance and their perceived self-efficacy in performing condom use.

Recently, in Thailand, condom use has been promoted as the best strategy to prevent HIV transmission among sexually active individuals. However, Thai men still engage in the high-risk behavior of inconsistently using condoms. The reasons vary: some say that using condoms feels unnatural or reduces sexual pleasure, and others are dissatisfied with the condoms (De Gruiter, 1997; Knodel, 1995; Wuthiwan, 1989). Furthermore, there is a misconception that not using a condom with non-CSWs, or casual partners, is less dangerous than with the CSWs. Also, another misconception among HIV-positive persons is that it is unnecessary to use condoms during sexual intercourse if the partner

already has HIV. Therefore, consistent condom use should be fostered to prevent HIV transmission to partners.

In the proposed study, Thai men who were HIV-positive were study subjects about their readiness and intention to use condoms. Three variables of the TMC have been selected: stages of change, the pros and cons of decisional balance, and self-efficacy. As described by the TMC (Prochaska & DiClemente, 1984; Prochaska et al., 1992), individuals progress across stages of change for condom use based upon their weighing of pros and cons of decisional balance and self-efficacy to perform condom use. The relationship between decisional balance and self-efficacy is also a reciprocal relationship.

Other variables that may influence the stages of change for condom use are personal factors such as age and individual behaviors such as disclosure of HIV status to partner, alcohol use, and drug use. The results from literature shown that younger individuals were more likely to consistently use condoms and were in higher stages of change (Bowen & Trotter, 1995; Grimley, Prochaska, Velicer, & Prochaska, 1995). In contrast, Gullette (1998) reported that older gay and bisexual men were in the higher stages of change for condom use. Other investigators (Gomez & Marin, 1996; Gulton, 1998) reported no relationship between age and condom use behavior. Using alcohol or drug are other factors reportedly associated with inconsistent condom use behavior in some studies (Collins, 2000; Nyamathi & Lewis, 1995). Finally, a relationship has been shown between disclosure of HIV status to partner and consistent condom use behavior (Niccolai et al., 1999). However, some HIV-positive individuals felt uncomfortable and feared of discrimination and rejection; therefore, they did not disclose their HIV status to their

partners, and they had inconsistent condom use (Gielen, O' Campo, Faden, & Eke, 1997; Yoshioka & Schustack, 2001).

According to these findings, there is inconsistent information regarding the variables that may influence the stages of change for condom use. Therefore, the chosen variables are proposed as personal variables that may affect stage of change for condom use.

In conclusion, the conceptual framework of the study is guided by the TMC and the findings from the literature review. Three variables--(a) personal factors of age, disclosure HIV status, alcohol use, and drug use; (b) decisional balance of pros and cons; and (c) self-efficacy of condom use--are proposed as predictors of stages of change for condom use. The conceptual framework of the study is illustrated in Figure 1.

Definitions of Terms

The following terms are operationally defined, based on the TMC, for the purposes of this study.

Condom--a male condom that will be used as a protective barrier by a male during his sexual relationship with his partner(s).

Stages of change for condom use--the five stages of change that people living with HIV go through and adhere to use condoms with their partners--precontemplation, contemplation, preparation, action, and maintenance--as measured by the Stages of Change Algorithm Questionnaire (Grimley, Prochaska, & Prochaska, 1993).

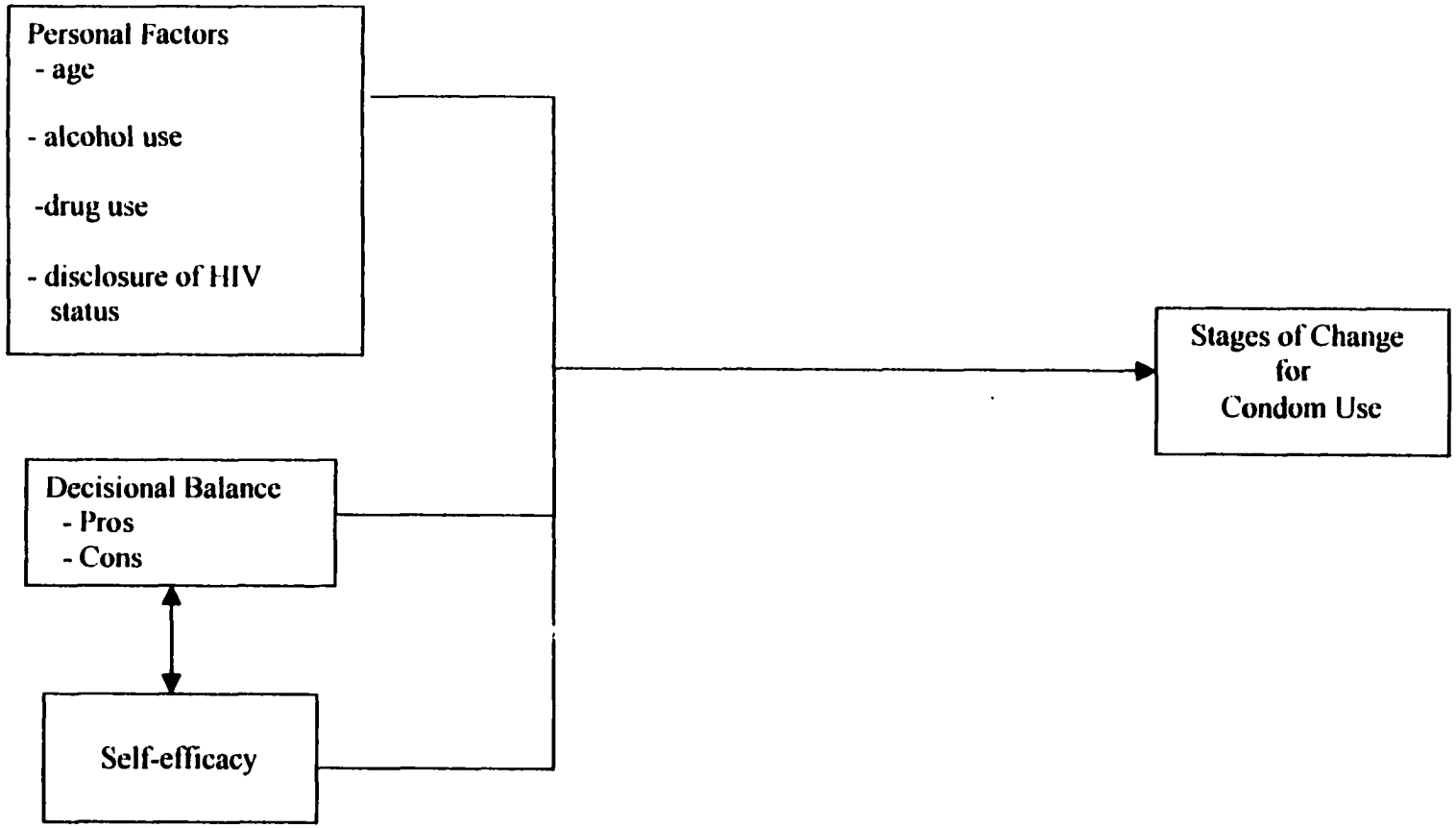

Figure 1. Conceptual framework for the study.

Precontemplation--consists of individuals who are not using condoms when they have sex with their partners and have no intention to start doing so every time in the next 6 months.

Contemplation-- consists of individuals who are not currently using condoms when they have sex with their partners, but intend to start doing so every time in the next 6 months.

Preparation--consists of individuals who intend to start using condoms every time when they have sex within the next month (30 days) and are currently using condoms almost every time with their partners.

Action--consists of individuals who have been using condoms every time they have sex with their partners for less than 6 months.

Maintenance-- consists of individuals who have been using condoms every time they have sex with their partners for more than 6 months.

Decisional balance--the balance between advantages (pros) and disadvantages (cons) of using condoms during sexual relationships, as measured by the Decisional Balance of Condom Use Questionnaire (Grimley et al., 1996).

Pros--the decision by HIV-positive people to use condoms with their partners because they will gain more advantages than disadvantages.

Cons--the decision by HIV-positive people not to use condoms with their partners because they will have more disadvantages than advantages.

Self-efficacy--the belief or perception of HIV-positive people in their ability to use condoms during sexual relationships with their partners in specific high-risk situa-

tions, as measured by the Self-efficacy for Condom Use Questionnaire (Grimley et al., 1996).

Sexual partner--individual(s) with whom the HIV-positive person usually has a sexual relationship. There are two types of partners: primary partner and other partner.

Primary partner--the wife or steady sexual partner of the HIV-positive person.

Casual partner--anyone other than the wife or steady sexual partner of the HIV-positive person.

Assumptions

For the purposes of this study the following assumptions were made:

1. Participants are sexually active persons.
2. Participants answer questions on the instruments truthfully.

Limitations

1. A convenience sample was used; therefore, findings from this study may not be representative of other HIV-positive Thai men who did not attend the clinics.
2. Self-report instruments were used; therefore, data obtained were limited to what subjects were willing and able to report. The responses may reflect socially desirable answers.
3. The instruments used in this study solicit information on some sensitive issues such as sexual behavior over a long-term period. Participants may not be able to accurately recall sexual encounters.

4. The instruments used were translated versions, which may affect validity of the responses.

5. Cross-sectional data were collected; therefore, change in sexual behaviors over time cannot be examined.

Significance of the Study

Instead of abstinence, consistent condom use is the most powerful strategy to prevent HIV and STDs transmission. With proper use, condoms can reduce HIV transmission 70% to 95% (Davis & Weller, 1999; Pinkerton & Abramson, 1997). Individuals who engage in high-risk behaviors, such as unprotected sex, are at risk for contracting HIV, particularly if their partners are HIV-positive. Little is known about condom use behavior among HIV-positive Thai men in Thailand, or factors influencing their intention and readiness to consistently use condoms during sexual contact with their partners. This information can assist nurses and other health care providers to design the appropriate intervention to encourage condom use adoption among this population. Therefore, research to examine condom use among HIV-positive individuals is needed. The present study, guided by the TMC, will help the researcher examine individuals' intention and readiness to use condoms as well as understand factors associated with the decision to use or not use condoms with partners. In addition, knowledge of individuals' readiness to consistently use condoms and determinants of their intentions is the key of successful behavioral intervention.

Summary

In this chapter, the background and significance of using the supporting theoretical framework of the study have been discussed. The results from this study will be useful in promoting HIV prevention and used as preliminary data for developing an intervention program to increase condom use among HIV-positive people. This study may also advance and extend the prediction of the TMC in another cultural setting, Thai culture. Moreover, the results of this study will also strengthen nursing knowledge because this study is theory-linked research that will lead to theory-based nursing practices.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this chapter is to review literature related to the phenomena of interest to this study. This review is organized as follows: the incidence of HIV and associated morbidity and mortality in the worldwide population, behavioral characteristics associated with HIV infection, the role of condom use in preventing HIV transmission, physiologic and behavioral variables associated with condom use, and a discussion of the study's supporting conceptual framework. Finally, the TMC will be applied to condom-using behaviors.

The Incidence, Morbidity, Mortality, and Sociodemographic Characteristics of HIV

By the end of 2001, 40 million people were living with HIV infection, compared with 36.1 million in 2000 (UNAIDS/WHO, 2001). The epidemic has not been totally overcome anywhere, and it is out of control in many places. New cases of HIV infection occur every year. In 2001 alone, the number of newly HIV-infected people was estimated at 5 million, and the number of AIDS related deaths was estimated at 3 million globally (UNAIDS/WHO).

The majority of global cases of HIV are among individuals who live in the developing world. Most of them live in Sub-Saharan Africa (28.1 million); the second area that has a great number of people with HIV positive persons, approximately 6 million, is South and Southeast Asia (UNAIDS/WHO, 2001).

All over the world, there are more men than women infected with HIV. It is reported that three of every five adults living with HIV are men. Of HIV cases in 1999, 57% were male and 43% were females. The number of adult males living with HIV or AIDS at the end of the year 2001 was 19.6 million.

In Thailand, a country located in Southeast Asia with a population of 62 million, the number of people who live with HIV is estimated to be approximately 1 million. Eighty percent of these individuals are male. The major route of transmission is sexual contact (83.4% of cases). At the end of September 2001, 176,807 cases had developed AIDS; the ratio of men to women was 3.1:1. The Northeast and Central regions reportedly account for the highest number of HIV/AIDS cases, followed by the South and Northeast regions (Division of Epidemiology, Ministry of Public Health, Thailand, 1999). It was reported that the rate of HIV/AIDS cases per 100,000 persons was 36.3 in the northern region; 28.7 in the central region (central and eastern area); 12.4 in the southern region; and 8.4 in the northeast (Division of Epidemiology, Ministry of Public Health, Thailand, 1999). In 1997, HIV prevalence among male who visited STD clinics in most northern provinces was over 40%, and 1% of pregnant women who visited antenatal clinics were reported to be HIV positive (Division of Epidemiology, Ministry of Public Health, Thailand, 1997).

The age distribution of HIV/AIDS cases in Thailand is as follows. At the end of September 2001, 27.7% of reported symptomatic HIV/AIDS cases were between 25 and 29 years of age; 24.8% of cases were among people aged 30 to 34 years; and 14.9% were among people 35 to 39 years old (Division of Epidemiology, Ministry of Public Health, Thailand, 2001). Most of them worked as laborers. The AIDS-related epidemic continues

on a global scale. Undoubtedly, human behaviors, particularly high-risk behaviors such as unprotected sex, continue to fuel the epidemic.

Behavioral Characteristics Associated with HIV Infection

It is known that acquired immune deficiency syndrome (AIDS) is caused by the human immunodeficiency virus (HIV), an organism transmitted through contact with infected body fluids. Thus, there are three primary ways in which HIV is transmitted: through unprotected sexual contact; through the sharing of blood and blood products, which includes injection drug use; and through mother-to-child transmission. Worldwide, over 80% of cases of HIV infection are spread through sexual contact (Adler, 1997; UNAIDS/WHO, 1999), and 10% of cases are men who have sex with men; whereas approximately 5% of cases are transmitted through injecting drug use. In Thailand, over 80% of all HIV/AIDS cases were attributed to heterosexual contact, and up to 30% of Thais with STDs were also HIV positive. Five percent of HIV transmission have been reported to be acquired through injection drug use, and an estimated 4% of cases are transmitted from mothers to infants (Division of Epidemiology, Ministry of Public Health, Thailand, 2001).

Individuals who engage in high-risk behaviors are at significantly increased risk for HIV infection. Those high-risk behaviors include (a) performing or submitting to unprotected sex, including vaginal, anal, and oral sex; (b) having multiple sexual partners; (c) having sexual contact with an infected partner; (d) sharing needles during intravenous drug use; and (e) having a history of STDs (Cates, Chesney, & Cohen, 1997; Latif & Marowa, 1999; Saracco et al., 1993). Another indicator of high-risk behavior is the combi-

nation of alcohol consumption and having sexual intercourse (Eich-Höchli, Niklowitz, Clement, Lüthy, & Opravil, 1998; Latif & Marowa, 1999; Maticka-Tyndale et al., 1997).

Unprotected or improperly protected sex is the major cause of HIV transmission worldwide. Many studies have shown that individuals fail to use condoms or engage in inconsistent or improper condom use (De Gruiter, 1997; Eich-Höchli et al., 1998; Maticka-Tyndale et al., 1997; VanLandingham, Grandjean, & Suprasert et al., 1997).

For example, in a study conducted among 117 asymptomatic HIV-infected persons (heterosexual and homosexual) in Switzerland, the findings revealed that 26% of participants had at least one incidence of unprotected vaginal or anal sex in the previous 6 months. In addition, 69% of participants reported unprotected oral sex. Some of the reported sexual partners were HIV positive, and some were HIV negative (Eich-Höchli et al., 1998).

Another study was conducted by using face-to-face interviews among 744 northern Thai men. Investigators reported that those men frequently visited commercial and noncommercial sex workers. Although 76% to 90% of those men reported using condom during sexual intercourse with their partners, some men reported that they inconsistently used condoms with their partners, especially with the noncommercial sex partners; and there was the report of slipping or leakage of condoms while having sexual intercourse (Maticka-Tyndale et al., 1997).

Adler (1997) reported that 80% of HIV infection was spread by the sexual route, of which 70% was via vaginal intercourse and 10% was via anal intercourse. Many studies have shown that having anal sex is much more risky for HIV infection than having vaginal or oral sex. It was reported that the probability of transmission associated with

vaginal intercourse was 0.0005 to 0.0015 (Downs & De Vincenzi, 1996), but with unprotected receptive anal intercourse, it was 0.008 to 0.032 (DeGruttola, Seager, Mayer, & Horsburgh, 1989). There is also evidence that anal intercourse is the most predictive risk factor for contracting HIV and seroconversion among heterosexual couples, and the reported rates of condoms use for heterosexual anal intercourse were lower than for vaginal intercourse. For example, a study among couples discordant for HIV status revealed that women who had anal sex with their HIV-positive partners were 2-4 times more likely to acquire HIV than women who had only vaginal sex (Stratton & Alexander, 1997).

In a longitudinal study, Wong and Chan (1999) reported that brothel-based sex workers who were inconsistent with condom use had 17 times more risk of contracting pharyngeal gonorrhea than those who were consistent with condom use.

Having 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. Because men tend to have multiple sexual partners, they are at higher risk for HIV infection (Ford & Koetsawang, 1999; Sittitrai, Panuphak, & Brown, 1992; VanLandingham et al., 1995).

For example, Maticka-Tyndale et al. (1997) conducted a study among 744 Thai men who lived in Khon Kaen, Thailand, by using face-to-face interviews, focus groups, and informal interviews. They reported that 50% of married men had experiences with CSWs, 47% of married men had purchased sex service since marriage and 41% of them had visited a CSW last year, 23% of married men had more than 1 CSW partner, and 43% of single men reported exclusive visitation to CSWs. Although the rate of condom use among these men was reported to be high (76%-90%), it was found that they did not

consistently use condoms. The more they visited CSWs, the less they used condoms. Moreover, 81% of those men reported that they had been drinking heavily when they visited CSWs. When they were inebriated, they reported loss of motor coordination and, thus, condoms were ineffectively used.

According to de Gruiter (1997), having multiple sex partners was also found among Thai male factory laborers. In this study, 48.8% (N = 330) of male factory laborers had sex with persons other than wives or girlfriends. The main reason for having multiple sexual partners was relaxation or fun (74%), followed by peer pressure from friends (60.5%). The total number of different sex partners reported by participants varied between 1 to 18 and 37.2% (n = 92) of participants reported 1 to 4, and 6.5% (n = 16) of participants reported 10 to 18 partners.

Injection drug use is another route of HIV transmission. The probability of transmission associated with contaminated injection drug equipment was reported to be 0.0067 (Kaplan & Heimer, 1992). It was found that among drug users, there was a significant correlation between injection drug use and unprotected sexual behavior (Khalsa, Kowalewski, Anglin, & Wang, 1992; Nutbeam, Blakey, & Pates, 1991).

Nyamathi and Lewis (1995) conducted research among impoverished minority female injection drugs users in United States and reported that more than 80% of them had unprotected sex. Moreover, women who reported having an injection drug-using partner, regardless of their own drug use, were more likely to engage in unprotected sexual activity than women who were only injection drugs users.

HIV transmission is associated with high-risk behaviors, including having unprotected sex, having multiple sexual partners, having sexual contact with an infected part-

ner, and sharing needles during intravenous drug use. One of the most effective strategies to reduce the rate of HIV transmission is to consistently and correctly use a condom during sexual contact.

The Role of Condom Use in Preventing HIV Transmission

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 methods. The most effective and least expensive method to reduce HIV transmission is correct and consistent condom use during sexual contact. Studies of sexually active persons show that consistent and proper condom use can reduce the HIV infection rate by 70%-95% (Adler, 1997; Laurence, 1999 a, b). For example, the European Study Group on Heterosexual Transmission of HIV (1992) evaluated 563 couples from nine European Communities. The findings indicated that among inconsistent condom users, 12% of the male partners and 20% of the female partners of HIV-infected persons became infected. However, among the 24 couples who consistently used condoms, none of the partners became infected.

Weller (1993) conducted a meta-analysis of partner-based seroconversion studies to examine condom effectiveness in reducing sexually transmitted HIV. She estimated that condoms might provide a 69% reduction in the risk of becoming infected. However, the study findings were limited because the frequency of condom use was differently defined.

Later, Pinkerton and Abramson (1997) reexamined Weller's study by considering the definition of condom use and direction of transmission and by utilizing model-based estimation techniques to analyze data. The findings indicated that effectiveness of consistent condom use for HIV was at least approximately 90% to 95%. They also reported that inconsistent condom users were about 20 times more likely than consistent users to seroconvert following repeated sexual contacts with an infected partner. In 1999, Davis and Weller reexamined 25 published studies of serodiscordant heterosexual couples. They summarized that the condom's effectiveness at preventing HIV transmission is estimated to be 87%. In a longitudinal study of 343 steady partners of HIV-infected men, investigators reported that only 2% of consistent condom users HIV seroconverted, but 15% of the inconsistent condom users HIV seroconverted (Saracco et al., 1993). The same result was reported in the study of De Vincenzi (1994). The results showed that one half of 256 serodiscordant couples used condoms at every intercourse, and no seroconversions occurred among these couples.

According to several studies, correct and consistent condom use provides a high degree of protection against HIV infection; inconsistent condom use provides an unacceptably low rate of protection. Indeed, inconsistent condom use can be as risky as not using condoms at all. Although condoms cannot prevent HIV transmission 100% of the time, in the worst case, condom barrier effectiveness is estimated to be at least 10 times better than not using a condom (Carey, Herman, Retta, Herman, & Athey, 1992; Porche, 1998).

Physiologic and Behavioral Variables Associated with Condom Use

Consistent and proper condom use is the most effective strategy to prevent sexually HIV infection and most STDs. However, consistent condom use is generally low among those who are HIV positive as well as those who are at high-risk (Brown-Peterside, Redding, Ren, & Koblin, 2000). Many factors involve an individual's decision in using condoms, including (a) disclosure of HIV status, (b) advantages and disadvantages of using condoms, (c) self-efficacy, (d) alcohol use, and (e) drug use.

Disclosure of HIV status is an important component of HIV prevention because knowing whether a sex partner is HIV-infected or not may help individuals to make decisions regarding their sexual behaviors, such as whether to have sex with a person and whether to use a condom. Condom use with partners to whom HIV-positive individuals do not disclose their status should also be considered because it is a high-risk situation for transmission of infection. Some reasons for nondisclosure of HIV status were reported in the literature, including fear of discrimination, rejection, or violence (particularly among women); a desire to protect loved ones; and confidentiality concerns (Gielen et al., 1997; Hayes, et al., 1993; Yoshioka & Schustask, 2001).

Several studies indicated that the rate of disclosure to sex partners was varied. For example, among gay or bisexual men, the rate of disclosure ranged from 50% to 95% (Marks et al., 1994; Schnell et al., 1992), and among the heterosexual population ranged from 60% to 80% (Simoni, Mason, Marks, Ruiz, & Richardson, 1995; Sowell et al., 1997). When considering types of partner, there was a report that HIV-positive individuals were more likely to disclose their HIV status to their close friends and partners (Wolitski, Rietneijer, Goldbaum, & Wilson, 1998).

Niccolai, Dorst, Myers, and Kisseinger (1999) conducted an intervention study to examine patterns of disclosure over time and condom use among HIV-positive persons. The result indicated that after the intervention program, approximately 76% of the sample reported disclosing their HIV status to their last sex partner, and condoms were used by 89.9% of the sample. Significantly, there was a relationship between consistent use of condom and disclosure of HIV status. Those who used condoms consistently were 2.70 times more likely to have disclosed their HIV status than those who reported inconsistent condom use (Niccolai et al., 1999). However, there are some limitations of this study. First, the majority of respondents were African American (88.4%, N = 147) and samples were not randomly selected; thus, generalizability was limited. Second, participants were not asked about disclosure to all sex partners; rather, they were only asked about disclosure to the last person with whom they had sex.

Perceived advantages (benefits) and disadvantages (barriers) of condom use are associated with intentions to use and with actual use of condoms (Maticka-Tyndale, 1991; Walter et al., 1993). If individuals view using condoms as useful, condoms will be used consistently or always; on the other hand, if they view using condoms as a disadvantage, condoms will not be used or will not inconsistently used.

It has been reported that prevention of STDs, HIV, and pregnancy were three major reasons for condom use (Grimley, Riley, Bellis, & Prochaska, 1993; Grimley, Prochaska, Velicer, & Prochaska, 1995; Grimley et al., 1996; Wuthiwan, 1989). For example, in a study of condom use among 444 young Thai men, aged 17-24, Tut (1997) reported that the major reason for using condom was prevention of STDs and HIV, fol-

lowed by prevention of pregnancy. The same reasons were found in other studies (Knodel, 1995; Wuthiwan, 1989).

For many people, consistent condom use is difficult; so they engage in inconsistent condom use. Many studies investigated reasons for not using and inconsistently using condom. Wuthiwan (1989) conducted a study to examine condom use among high-risk men in Chonburi province, Thailand. The findings revealed that 50.3% (n = 151) of men inconsistently used condom, 46% never used a condom, and only 4.7% (n = 14) used condoms every time. Participants who were inconsistent in condom use reported reasons for not using condom as not having a condom, feeling unnatural, and drinking alcohol before having intercourse. These reasons were also reported in other studies (De Gruiter, 1997; Maticka-Tyndale et al., 1997).

In a study of condom use conducted among commercial sex men in Patpong and Pattaya, Thailand, the results indicated that these men inconsistently used condoms with casual partners if they got more money or handsome customers (Gulton, 1998).

In a qualitative study conducted in Thailand, data were derived from focus group discussions and individual in-depth interviews of 21 married men and 26 married women. Knodel (1995) discovered that 52.4% (n = 11) of male participants still CSWs since the marriage, and they inconsistently used condom with their partners. Moreover, those men rarely used condoms while having sexual intercourse with any partners unless they had STDs from the last visit. Male participants reported that they had not usually used condoms with their wives or main partners because it might raise suspicions of extramarital sexual activity. Using a condom with a main partner was reported for temporary prophylactic purposes, particularly when the wife realized her husband had had sex with a pros-

titute. Some male respondents reported that using condoms with their main partner was seen as interference, causing intercourse to be unnatural or not smooth as slowing down the desire, and causing one to feel itchy and numb. They also thought it would be useless to use a condom, and felt their partners might feel insulted.

In a study among 287 American heterosexual college students, 198 women and 89 men, Wendt and Solomon (1995) reported that 22.7% (n = 45) of women were consistent condom users, but 24.7% (n = 22) of men were consistent condom users, whereas 41.6% (n = 37) of male were inconsistent users. Students who reported using oral contraceptives were likely to report a perceived need to use condoms and engage in consistent condom use. One of the major limitations of this study is that participants were asked to recall their condom use and sexual behavior over a 2-year period.

In a study conducted in northern Tanzania, 1081 respondents were interviewed with structured questionnaires for collecting data. The findings revealed that 69.9% of the respondents knew what condoms were, and of these 55.3% reported using condoms for contraception, while 24.2% reported that condoms were used for HIV/AIDS prevention. Respondents who inconsistently used condoms reported that they disliked using condoms because condoms reduced sexual enjoyment. More men than women reported disliking using condoms and felt that condoms reduced sexual pleasure (Mnyika & Kvale, 1995).

In conclusion, the major advantages related to using condoms are the prevention of STDs, HIV, and pregnancy. Several reasons given as disadvantages of using condoms include feeling unnatural, slowing down the desire, reducing pleasure and sexual enjoyment, feeling itchy and numb, not having a condom, feeling that they would not work any way, and feeling that sexual partners might be insulted.

Self-efficacy is another variable that plays an important role in helping individuals to change their high-risk behaviors. Many studies have shown that perceived self-efficacy is associated with reducing high-risk sexual practice (Bandura, 1986; Prochaska, Redding et al., 1994).

In a study conducted among college students by Brien and Thombs (1994), four dimensions of condom use self-efficacy emerged: mechanics, partner's disapproval, assertiveness, and intoxicants. The results revealed that there were 28.4% of students who were consistent condom users, 20.4% of them were nonusers, and 51.3% of them were inconsistent condom users. Investigators reported that the nonusers were less confident in their ability to discuss condoms and to insist on their use with a sexual partner.

In a survey study among 393 low-income American women, a self-reported questionnaire was used to collect data. Investigators reported that high scores on condom-related self-efficacy and strong confidence in one's ability to negotiate condom use were associated with being a consistent condom user (Soler, Quadagno, & Sly, 2000).

DeLamater, Wagstaff, and Havens (2000) conducted an experimental study among 562 Black American male adolescents by comparing videotape and health educator strategies to promote condom use intentions, self-efficacy, and condom use behavior. The outcomes were measured on the same day of administering the intervention, then at 30 days and 6 months after administering the intervention. The findings indicated that both groups of respondents had greater condom use intentions, self-efficacy, and more consistent condom use than before the intervention. The health educator group had a greater increase in those variables than those who were in the videotape group. However, at 6 months, some respondents reported that they had more sexual partners, but they were

likely to be consistent in condom use with their steady partners (53%) and with casual partners (50%). The findings also reflected a relationship between self-efficacy and condom use behavior; when self-efficacy to condom use was high, the percentage of condom use was increased.

In the literature, individuals who have high self-efficacy are found among consistent condom users. Whereas, those who have low self-efficacy perform inconsistent condom use.

Condom use tends to decrease among people who are in intimate long-term relationships. For example, studies of noninfected HIV persons showed that more sexual risk behavior had occurred among men who had long-term relationships than among those who had casual or nonregular partners (Hayes, Kegeles, & Coates, 1997; McLean et al., 1994).

Semple, Patterson, and Grant (2000) examined the relationship between partner type and sexual risk behavior in a sample of HIV-positive gay and bisexual men ($\underline{N}$ = 133). The findings revealed that men with steady partners and men with anonymous partners had inconsistent condom use (52.8%, $\underline{n}$ = 19 and 84.2%, $\underline{n}$ = 16; respectively). Importantly, 100% of inconsistent use of condoms was reported for those who had oral sex with all partner types (steady partner, casual partner, and anonymous partner). The top three reasons for not using condoms were (a) condoms reduce sexual pleasure, (b) partner did not suggest using a condom, and (c) used withdrawal technique. The researchers also suggested that partner type (main partner and casual partner) should be considered in the development of sexual risk-reduction interventions (Semple et al., 2000). Some limitations of this study include the small sample size of homosexual and

heterosexual men. Thus, generalization of the study is limited. Also, this study used self-reported response and asked about high-risk behavior in the past; thus, participants may have forgotten their sexual behavior.

A study conducted among HIV-infected persons in Switzerland (N = 117) showed that they had unprotected sex with both regular and casual partners. The main predictor for unprotected sex with regular partners was an elevated number of sexual contacts. The predictor for unprotected sex with casual partners was the combination of alcohol and sexual encounters. Low self-esteem and low social competence were related to unprotected sex behavior (Eich-Höchli et al., 1998).

De Gruiter (1997) conducted a descriptive study to assess condom use among male factory laborers in Nakhon Chaisi, Nakhon Pathom, Thailand. The results showed that 76% of these men consistently use condoms with commercial sex partners, 56% consistently use condom with regular partners, but only 40% consistently use condom with their casual partners.

In 1997, Khaing conducted a study among 108 Myanmar workers who worked at Samut Sakhorn, Thailand. The results revealed that 69.5% of those men never used condoms with their partners, and 61% of them inconsistently used condoms. However, the findings reported that those who intended to use condoms were more likely to use condoms than those who did not intend to use condoms. The limitation of this study was that the sample size was small; thus, the generalizability was limited. Moreover, face-to-face interviews were used to gather information; there might have been a problem from language barriers between the interviewer and the respondents. Also, the research topic

involved speaking about sexual encounters, which is not openly discussed in the Thai society.

In contrast, the relationship of partner types to condom use among those who are at risk for HIV or those who are HIV positive differs from those who are HIV negative. O'Campo and colleague (1999) examined the readiness to use condoms among high-risk women aged 15-44 years in different settings. The results indicated that HIV-positive women had used condoms more consistently with their main partner (57%) than with their casual partners (41%). Several flaws were found in this study. First, data were collected by structured interview; thus, respondents might have felt uncomfortable. Second, the sample size was small.

According to previous studies, condom use varies depending on partner type, main partner or casual partner. The majority of subjects reported that they consistently used condoms with casual partners and inconsistently or never used condoms with their main partners. However, questions remain regarding condom use behavior among HIV-positive people and the types of partner. Thus, it is important to investigate the relationship of partner types and condom use among this population in order to use the information to develop a program to reduce high-risk behavior.

Using alcohol or drugs affects the function of central nervous system. Individuals may be more impulsive and have poor decision-making skills when using alcohol or drugs; thus, condoms are used ineffective and inconsistently. It was found that those who use alcohol or drugs were less likely to consistently and properly use condoms (Boyer & Tscham, 1999; Brown-Peterside et al., 2000).

In 1997, De Gruiter conducted a study to examine condom use among Thai laborer men in Nakhon Pathom, Thailand. The results revealed that approximately 50% of these men inconsistently used condoms with temporary partners, and these men reported that they had drunk alcohol before and while having sexual encounters. Likewise, the findings of some studies related alcohol consumption to inconsistent and improper condom use (Brien & Thombs, 1994; Maticka-Tyndale et al., 1997; Wuthiwan, 1989).

In 2000, Brown-Peterside and colleagues conducted a study to examine condom use in high-risk women. The findings shown that more than 50% of drug users (Intravenous drug users and crack smokers) were inconsistent condom users. Also, in the study conducted by Collins (2000), those who used cocaine in the last 30 days were more likely to use condoms inconsistently with their partners.

In summary, factors involving condom use include disclosure of HIV status, advantages and disadvantages of using condoms, self-efficacy, alcohol use, and drug use. Therefore, these factors should be considered for developing the intervention program to reduce high-risk behaviors for HIV prevention.

The Transtheoretical Model of Behavioral Change and Condom Use

The TMC (Prochaska & DiClemente, 1984) has been applied to a broad range of health behaviors such as exercise adoption, smoking cessation, drug and alcohol abuse, diet and weight control, and condom use adoption. It is used to describe how individuals move through different stages of change from high-risk behaviors to adopt the healthier behaviors. The core constructs of the model are the stages of change, the processes of change, decisional balance (pros and cons of change), and self-efficacy. The basic prem-

ise of the TMC is that individuals are at different stages of readiness to change their high-risk behaviors, and strategies used to promote their changes are different based upon their current stage of change. Thus, individuals need to be assessed regarding their readiness to change, or stages of change, before they are provided the intervention for change.

For condom use behavior, the stages of change is used to classify individuals' intention and readiness to adopt condom use behavior into five stages of change: precontemplation, contemplation, preparation, action, and maintenance. Individuals in the precontemplation stage are not currently using condoms every time they have sex with their partners and have no intention of doing so in the future. The precontemplators are unaware of the dangers of not using condoms whether or not they know that practicing unprotected sex is at risk for contracting HIV.

Individuals who are in the contemplation stages are those who are using condoms sometimes, but do not currently use condoms every time they have sex; however, they may intend to use condoms consistently in the next 6 months. The contemplators are seriously thinking about how to change or reduce their high-risk behaviors.

It was found that most individuals who inconsistently used condoms were in the precontemplation or contemplation stage for condom use. For example, Gullette (1998) conducted a study among gay and bisexual men. The results indicated that most of participants were in the precontemplation stage of change for condom use during vaginal, anal, and oral intercourse with primary partners. With casual partners, those men were in the precontemplation stage of change for condom use during oral intercourse but in the maintenance stage for vaginal and anal intercourse.

Likewise, Polacsek, Celentano, O'Campo, and Santelli (1999) conducted a study of condom use among 812 African Americans with a regular partner. They reported that 52% of women and 46% of men were in the precontemplation stage, and 12% of men and 12% of women were in the contemplation stage.

In a study conducted by Brown-Peterside and colleagues (2000), consistent condom use among high-risk women who lived in New York was determined. The findings showed that most of the respondents were in the precontemplation or contemplation stage: 21% in precontemplation and 42% in contemplation. Limitations of the study included a small sample size ($N = 62$) and the majority of the respondents being African American women (82%).

From the literature reviewed, it appears that more than 50% of all study population were in the early stages of change for condom use: the precontemplation or contemplation stage (Galavotti et al., 1995; Jamner, Wolitski, & Corby, 1997; O'Campo et al., 1999; Prochaska et al., 1994; Schnell, Galavotti, Fishbein, & Chan, 1996). There is the need for change of this behavior to reduce the spread of HIV infection. According to the TMC, moving individuals from the early stages of change (precontemplation and contemplation stages) to the later stages (action and maintenance stages) requires different strategies from the processes of change. These strategies include consciousness raising, dramatic relief, environmental reevaluation, and self-reevaluation (Prochaska & DiClemente, 1984).

In the next stage of change, preparation, individuals intend to use condoms every time they have sex within the next month and are currently using condoms almost every time with their partners. At this stage, individuals view consistent condom use as having

more benefits than inconsistent use of condoms; therefore, they almost consistently use condoms with their partners.

In the action stage, individuals are overtly engaged in new, more positive behaviors by setting up criteria to reduce high-risk behaviors. They are using condoms every time they have sex with their partners, but have been doing so for less than 6 months. Individuals in the action stage are consistently practicing condom use every time, before moving to the maintenance stage (Grimley, Prochaska, & Prochaska, 1997; Grimley, Prochaska, Velicer, & Prochaska, 1995).

In the maintenance stage, individuals use condoms every time they have sex with their partners. They are less tempted to relapse and increasingly more confident to sustain the condom use behavior.

In the action and maintenance stages, there is less chance of relapse; however, inconsistent condom use can occur when individuals are in high-risk situations or use drugs or alcohol. Therefore, to prevent relapse and maintain healthier behavior (protected sex), reinforcement management, helping relationships, counterconditioning, and stimulus control strategies are suggested (Prochaska & DiClemente, 1984; Prochaska, Redding et al., 1994).

Decisional balance is a process that individuals use to weigh advantages (pros) and disadvantages (cons) of changing behavior (Prochaska & DiClemente, 1984). To adopt condom use, individuals weigh the advantages and disadvantages of using condoms. If they perceive more advantages associated with condom use, condom use is adopted and performed. It has been found that in the preparation and action stages, the

perceived advantages of using condoms outweigh disadvantages (Grimley et al., 1997; Prochaska & DiClemente, 1984).

Self-efficacy is another construct in the TMC. It refers to an individual's belief in his or her capacity to execute behaviors necessary for specific performance attainments (Bandura, 1977, 1995). Self-efficacy reflects confidence in the ability to exert control over one's own motivation, behavior, and social environment. Self-efficacy has been used successfully to help individuals change their risky behavior. Individuals who have high self-efficacy will easily perform the change, whereas those who have low self-efficacy will have trouble and be unsuccessful at changing behaviors. Across stages of change, self-efficacy is highest in the action and maintenance stage and lowest in the pre-contemplation stage (Grimley et al., 1996; Prochaska, Redding, Harlow, Rossi, & Velicer, 1994)

The TMC has been used widely to assess individuals' readiness to change the high-risk behavior and to provide strategies to help individuals move to healthy behavior. For example, Grimley and colleagues (1993) conducted a study among college students to examine the decision-making process for contraceptive use and STD prevention. They reported that participants did not rely on condom use with their partners, and more than 50% of them were in the precontemplation and contemplation stage. Among those pre-contemplators and contemplators, the disadvantages in using condoms outweighed the advantages. On the other hand, respondents who were in action and maintenance stage reported that the advantages outweighed the disadvantages in using condoms (Grimley, Prochaska, Velicer, & Prochaska, 1995; Grimley, Riley et al., 1993). These findings are congruent with a study of 12 behavior problems, conducted by Prochaska and colleagues

in 1994. The investigators suggested that staged-matched interventions were needed to encourage individuals consistent condom use.

Malotte et al. (2000) evaluated the outcomes of a counseling project that were used to reduce high-risk sexual behaviors and transmission of STDs. The independent variables, including stages of change, condom use, self-efficacy, attitude, and norm of condom use, were assessed at baseline and 3 months after counseling was provided. All outcome variables were measured and compared at each stage of change. The investigators reported that scores of all variables (condom use, self-efficacy, attitude, and norm of condom use) were increased across stages of change. Furthermore, the greatest difference in each of those variables occurred between people in the precontemplation and contemplation stages. The increases between precontemplation and contemplation were at least three times the magnitude of other transitions. There was no significant change in attitudes, norms, or self-efficacy between action and maintenance stages ($p > 0.97$). The investigators suggested that any intervention program to increase condom use should be targeted toward self-efficacy since individuals were in the precontemplation and contemplation stages. This is opposite of the framework of the TMC, in which increasing self-efficacy would not be effective until individuals are at least in the preparation stage (Prochaska, Norcross, & DiClemente, 1994).

Polacsek et al. (1999) conducted a study to examine condom use and self-efficacy of condom use among 812 African Americans with a regular partner. The findings revealed that there were 52% of women and 46% of men in precontemplation, whereas 19% of women and 28% of men were reported to be in the action stage. Self-efficacy of condom use was increased across stages of change, and greater condom use self-efficacy

with partners was associated with more advanced stages of change. Also, it was found that longer relationships were associated with the precontemplation stage over the action stage.

Jamner et al. (1997) conducted a longitudinal study guided by the TMC to evaluate condom and bleach use among injecting drug users ($N = 3081$). The intervention strategies included dissemination of information, development of behavioral skills (proper condom and bleach use), positive reinforcement, peer support, and role model stories. Those strategies were distributed along the intervention areas for 3 years. The outcomes were measured at baseline and every 3 months for 3 years. Investigators reported that rates of condom carrying increased from 10% to 27% ($p < 0.001$), and there was an increase from 2.32 to 3.11 in mean stage of change for using condoms with other partners, while stage of change decreased in the comparison area ($p < 0.01$).

In previously cited studies, the TMC was useful and appropriately applied to reduce the risk of HIV transmission. Thus, using the TMC will provide the way to evaluate individuals' readiness to change and strategies to encourage the change, such as self-efficacy, and the processes of change.

Summary

At present, the number of newly HIV infected persons increases every year. Among sexually active persons who have not been mutually monogamous over the long term, consistent condom use is the alternative for HIV prevention. Knowledge of HIV prevention and factors involved in individuals' decision to use condoms are used to develop an HIV prevention program. However, condoms are not used consistently by unin-

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CHAPTER 3

METHODOLOGY

The following methodologic components of this project are discussed in this chapter: the setting, population and sample, instrumentation, protection of human subjects, data collection, and proposed data analysis.

Research Design

Utilizing a descriptive design with the TMC as a framework, the primary purpose of this study was to establish the rate of condom use among a subsample of the HIV population in eastern Thailand. A second goal of the research was to apply the TMC by (a) determining stages of condom use among participants; (b) determining the distribution of decisional balance (pro and con) and self-efficacy scores of participants across stages of change; (c) characterizing the relationship between stages of change for condom use, decisional balance (pro and con), and self-efficacy scores; and (d) identifying predictors of stages of change for condom use.

The dependent variable was stages of change for condom use (precontemplation, contemplation, preparation, action, and maintenance stage). Independent variables included the pros and cons of decisional balance, self-efficacy, and personal factors, including age, disclosure of HIV status, alcohol use, and drug use. These variables were measured by the study instruments located in Appendix A.

Setting

This study was conducted at outpatient clinics of four provincial hospitals located in the eastern region of Thailand. There are seven provinces in eastern Thailand. Four provinces were selected because of the high incidence of HIV in each province. Four provincial hospitals were selected because they serve an accessible population. These hospitals are under supervision of the Ministry of Public Health; they have the same policies in providing services to people locally and to patients who are referred from other hospitals.

Population and Sample

The study population was composed of HIV-positive males diagnosed by physicians and followed at the four outpatient clinics at Chonburi, Rayong, Chantaburi , and Chachoengsoa hospitals. Participants were selected by convenience of encounter and willingness to participate. The sample selection criteria were the following: (a) an HIV-positive male; (b) self-reported sexually active person; (c) be at least 18 years old; (d) able to speak, read, and write Thai; and (e) have no extensive neurological involvement that would compromise participants' ability to respond to items.

A power analysis was used to calculate the sample size needed for this study. Based on a previous study by Grimley, Prochaska, Velicer, and Prochaska (1995), the multivariate effect size ($\underline{q}^2$) was calculated, $\underline{q}^2 = 0.5$, which constitutes a large effect size (Lauter's table in Stevens, 1996). Therefore, at $\underline{\alpha} = .05$, $\underline{q}^2 = 0.5$, power = .80, with three independent variables, the sample size required was 37 participants in each group. With five groups of participants (five stages of change); the total number of participants re-

quired would be at least 165. Although the number of participants included in this study was 221 cases; the number of participants in each group was limited, ranging from 3 to 54 cases. This limitation resulted in the small cell sample size. Therefore, the power and generalization of the study are limited.

Instrumentation

Instruments used in this study were (a) a sociodemographic data form, (b) Application of the TMC to Condom Use questionnaires, (c) the Decisional Balance for Condom Use questionnaire, and (d) the Self-Efficacy for Condom Use questionnaire (see Appendix A). These instruments were modified for the appropriateness of the study by getting permission from the developers of the instruments.

The sociodemographic data form was developed by the investigator. The form contains questions about sociodemographic information and sexual behavior, including (a) age, (b) education level, (c) marital status, (d) income, (e) types of sexual activity, (f) partner types, (g) disclosure of HIV status, (h) history of STDs, (i) alcohol use, (j) drugs use, and (k) reasons for condom use.

The Application of the TMC to Condom Use questionnaire was developed by Grimley et al. (1996). This questionnaire was designed to measure the intention to use condoms during each of the stages of change with primary and causal sexual partners. The reliability of each stage of change for condom use was validated; the coefficient alphas obtained for each of the stages of change were (a) precontemplation, 0.88; (b) contemplation, 0.88; (c) preparation, 0.89; (d) action, 0.89, and (e) maintenance, 0.88 (DiClemente et al., 1991; McConnaughy, Prochaska, & Velicer, 1983). Thus, the question-

naires were determined to be reliable for each stage of change. For this study, the TMC to Condom Use questionnaire was also modified to measure stages of change for condom use during vaginal and anal intercourse among the HIV-positive Thai men with primary and casual partners. There were four questions in each type of sexual activity. The level of measurement for the stages of change for condom use was a categorical scale.

The questionnaire also measures decisional balance (pros and cons) and self-efficacy (confidence) of participants concerning condom use. The measurement levels of these scale were interval scales. These measures were tested on a population at risk for HIV. A confirmatory factor analysis and structural equation model were conducted. The results demonstrated the robustness of the scales; therefore, more standardized measures can be used when assessing attitudes and behaviors toward condom use among population at varying levels of risk for HIV or sexually transmitted disease infection. Grimley et al. (1996) reported that the reliability for decisional balance was 0.94 and for self-efficacy was 0.99.

The decisional balance construct measures the pros (advantages) and cons (disadvantages) of condom use, consisting of 10 items, 5 items in each scale (Grimley et al., 1996). Each item is measured on a 5-point Likert scale, ranging from 1 (not at all important) to 5 (extremely important). The alpha coefficients for using condoms with primary partners were 0.82 (pros) and 0.93 (cons). For nonprimary partners, the alpha coefficients were 0.83 (pros) and 0.87 (cons). A higher pro score means the respondent sees more advantages from condom use. Thus, this instrument is reliable for use in this study.

In this study, the decisional balance (pros and cons) questionnaire was modified to measure the pros and cons of condom use during sexual intercourse among HIV-

positive Thai men with primary and casual partners. There were 10 items, 5 items of pros and 5 items of cons, for each type of sexual partner. The internal consistency of the instrument was calculated. For primary partner, the alpha coefficients were .74 for the pros and .77 for the cons. For casual partners, the alpha coefficients were .70 for the pros and .74 for the cons. According to Nunnally and Bernstein (1994), an alpha coefficient of 0.7 is acceptable for comparing the score of groups or in the early stages of predictive validation research. Although this instrument has been used in different populations in the United States, this research was its first used for a cross cultural population. Therefore, the requisite alpha coefficients of the pros and cons for each type of partner, ranging from .70 to .74, were satisfied.

The self-efficacy construct measures an individual's perceived ability to use condoms with primary and causal partners and consists of two 5-item Likert scales (Grimley et al., 1996), ranging from 1 (not at all confident) to 5 (extremely confident). Grimley et al. reported the reliability of alpha coefficient for primary partners was 0.87 and was 0.88 for nonprimary partners. The higher the score on self-efficacy, the greater the confidence of participants in using condoms with partners. In this study, the alpha coefficients for self-efficacy or confidence to use condoms with primary partners were .81 and with casual partners were .80. This result indicated that the questionnaire was reliable.

All of these instruments were translated into the Thai language by three translators. The symmetrical translation method was used (Jones & Kay, 1992). Then, the Thai version of instruments were reviewed for face validity, clarity, and readability by another translator who was fluent in both American English and the Thai language. To facilitate sensitivity to the Thai culture, some words or questions were modified. The Thai version

of all instruments were verified by using the back-translation method (Brislin, 1980). The Thai version of all instruments was translated back into English by two translators who were fluent in both the Thai language and American English. Items with differences between the two languages were modified, and the back translation was repeated until both versions had the same meaning.

To determine validity of the Thai version of the instrument, content validity and face validity were conducted. To determine content validity, the questionnaires were administered to five validators, asking them to evaluate whether the instruments were relevant to the objectives and represented the content domain of the study (Nunnally, 1978; Waltz, Strickland, & Lenz, 1991). Then, the content validity index was calculated to determine validity of the Thai-version instrument. To evaluate the questionnaire for face validity and appropriateness of instruments to the HIV population, all translated questionnaires were administered to three HIV-positive people. They were asked to make comments on any questions that were either unclear or were not applicable for them. Then, the selected items were modified for appropriateness of use. Some words were changed for appropriateness and for Thais. Only the self-efficacy questionnaire was changed, in that the item of drugs and alcohol use was separated. The final version of self-efficacy questionnaire consisted of 6 items. Then, the internal consistency of all instruments was established by using Cronbach's alpha coefficients.

Protection of Human Subjects

The study was reviewed by the Institutional Review Board (IRB) of the University of Alabama at Birmingham (UAB) and the directors of each hospital in Thailand.

Upon approval, participants were invited to participate in the study, with freedom to withdraw from the study at anytime without penalty. The investigator explained the purpose of the study and procedures to participants before obtaining their consent. The confidentiality of participants' questionnaires was maintained by using code numbers. No names or any identifying information were used in data analysis or discussion. The results were reported as group data.

Although there were no physical risks to participants in this study, they may experience some brief emotional discomfort from completing the questionnaire. A private room was prepared for participants to use while they were completing the questionnaire. Participants were informed that they could refuse to answer any items or withdraw from the study at anytime before or during completion of the questionnaire.

Pilot Study

A pilot study was conducted to identify problems with the clarity of the items, to establish reliability of the instruments, and to assess the amount of time required for completing the questionnaire. A group of 25 HIV-positive people were asked to participate in the pilot study and to voluntarily sign the consent forms. Participants were asked to complete questionnaires and returned them to the investigator who was at the site. The Cronbach's alpha coefficient was used to calculate the internal consistency of the questionnaire. The results of the pilot study were used to revise the scale appropriateness for HIV-positive Thai men.

Data Collection Procedures

Data collection was begun after the approval was obtained from the IRB of UAB and directors of each hospital. The study was conducted from June to November of 2001. The recruitment process was conducted as follows. First, the investigator or researchers, who were well trained, reviewed the daily appointment book to determine the list of eligible participants. On the visiting day, the potential participants were approached and given brief information about the study, including purpose, benefits, and risks of the study. Those who agreed to participate in the study were asked to answer questions to evaluate whether they met the criteria of having no neurological involvement. The mini-mental state questionnaire was used to evaluate participants' orientation (see Appendix B). Those participants who met the inclusion criteria were asked to complete the consent forms. Then, the instruments were provided to participants to complete in the private room adjacent to the clinics. When they finished completing questionnaires, participants returned questionnaires to research assistants in the next room. If participants had any questions about completing the questionnaires, they could directly ask the research assistant who was outside the room.

To reduce the errors that could occur during data collection process, the information about the study and a data collection guideline were provided to all research assistants. They were trained to follow the guidelines carefully until they felt comfortable with the process.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS)

computer software package for Windows, version 10. To answer research questions, descriptive and inferential statistics were used. The alpha level for significance was set at .05.

Descriptive statistics were used to describe demographic data: age, marital status, educational level, income, partner types, types of sexual activity, disclosure of HIV status, history of STDs, alcohol and drugs use, and reasons for condom use. To answer the research questions, the following statistical analyses were used.

Research Questions 1 and 2 were descriptive in nature: "What is the proportion of condom use during sexual contact among HIV-positive Thai men in eastern Thailand with primary and casual partners?" and "What are stages of changes for condom use during sexual contact among HIV-positive Thai men in eastern Thailand with primary and casual partners?" Frequency distribution and percentages were used to characterize the frequency of condom use and stages of change among the HIV population.

Research Question 3 asked, "Are the pattern of self-efficacy, and pro and con scores by stages of change consistent with the TMC?" The mean scores and standard deviation, MANOVA, and discriminant analysis were used to characterize the variation of pro, con, and self-efficacy scores across stages of change.

Research Question 4 asked, "What are differences in self-efficacy, and pro and con scores among stages of change for condom use?" MANOVA and discriminant analysis were used to examine the differences among those variables.

Research Question 5 asked, "Which of these variables are the best predictors for stages of change for condom use: decisional balance (pros and cons), self-efficacy, age,

alcohol use, drug use, and disclosure of HIV status?" Logistic regression analysis was used to indicate the best predictors for each stage of change for condom use.

Summary

As guided by the TMC, this research explored the proportion of condom use among HIV-positive Thai men and predictors of stages of change for condom use. Results from this study will be used as a preliminary data to design an intervention program to increase condom use among those who are at risk and among the HIV-positive population.

CHAPTER 4

FINDINGS

The purpose of this chapter is to present the results of the data analysis. A descriptive study was incorporated into this study (a) to determine stages of changes for condom use; (b) to characterize the relationships between stages of changes for condom use, decisional balance, and self-efficacy scores; and (c) to identify predictors of stages of change for condom use. This chapter consists of the demographic characteristics of the sample and findings related to the research questions of the study.

Demographic Characteristics of Sample

A total of 221 HIV-positive Thai men who met the inclusion criteria were recruited from outpatient clinics of four regional hospitals (Chonburi, Rayong, Chanburi, and Chachoengsoa hospital) in Thailand. All participants agreed to participate in the study and signed the informed consent. Data were collected from June to November, 2001. The self-report questionnaires were used to gather data. Data collected to describe demographic characteristics and personal behaviors of the sample are shown in Table 1. The information includes marital status, educational level, occupation, alcohol use, drug use, length of HIV positive, sexual preference, types of partner, disclosure of HIV status, history of STDs, types of STD, and reasons for condom use.

Participants ranged in age from 18 to 75 years, with a mean age of 34.61; and the standard deviation was 6.91 ($N = 221$). Seventy-six participants (34.4%) were ages 30 to

Table 1

Demographic Characteristics of Sample

Variable	n	%	M	SD
Age (18-75, n = 221)			34.61	6.91
18-24	10	4.5		
25-29	34	15.4		
30-34	76	34.4		
35-39	53	24.0		
40-44	33	14.9		
45-49	8	3.6		
≥ 50	7	3.2		
Marital status (n = 218)				
Single	43	19.5		
Married	139	63.8		
Divorced	8	3.7		
Separated	20	9.2		
Widowed	8	3.7		
Education (n = 220)				
No	4	1.8		
Elementary school	87	39.5		
Middle grade	56	25.5		
High school	37	16.8		
Certificate level	26	11.8		
Bachelor degree/higher	10	4.5		
Occupation (n = 221)				
Labor	122	55.4		
Merchant	36	16.4		
Agriculture	27	12.3		
Government officer	16	7.3		
Others	18	8.2		
Alcohol use (n = 221)				
Every day	15	6.8		
Sometimes	38	17.2		
Never	168	76.0		
Drug use (n = 219)				
Every day	7	.2		
Sometimes	1	.5		
Never	211	96.3		

Table 1 (Continued)

Variable	n	%	M	SD
Length of HIV positive (n = 221)				
Less than 1 year	76	34.4		
1 to 3 years	69	31.2		
Greater than 3 years, but less than 7 years	43	19.5		
Over 7 years	33	14.9		
Sexual preference (n = 221)				
Heterosexual	208	94.1		
Homosexual	8	3.6		
Bisexual	5	2.3		
Type of partner (n = 221)				
Primary	173	78.28		
Casual	63	28.51		
Both primary and casual	22	9.95		
Disclosure of HIV status to primary partner (n = 200)				
Always	103	51.5		
Sometimes	40	20.0		
Never	57	28.5		
Disclosure of HIV status to casual partner (n = 116)				
Always	18	15.5		
Sometimes	19	16.4		
Never	79	68.1		
History of STD (n = 220)				
Yes	78	35.5		
No	142	64.5		
Type of STD (n = 61)				
Gonorrhea	45	73.77		
Syphilis	6	9.84		
Herpes	5	8.19		
Chancroid	3	4.92		
Others	2	3.28		

Table 1 (Continued)

Variable	n	%	M	SD
Reasons for condom use (n = 220)				
Pregnancy prevention	82	37.3		
To prevent STD transmission to partner	98	44.5		
To prevent HIV transmission to partner	139	63.2		
To prevent STD and HIV re-infection	143	65.0		

Note. N = 221. There were some missing data for some of demographic characteristics resulting from participants' incomplete responses.

34 years, and 53 (24.0 %) were ages 35 to 39 years. One hundred and thirty-nine (63.8%) participants were married; 43 (19.5%) were single; and 36 (18%) were divorced, separated, or widowed.

Of 220 participants, 87 (39.5%) participants completed elementary school; 56 (25.5%) completed middle school; 37 (16.8%) finished high school; and 26 (11.8%) completed certificate degrees. The majority of participants, 122 (55.4%), worked as labors; and 36 (16.4%) were merchants.

Participants were asked to report about their drinking habits in the last 6 months. Thirty-eight (17.2%) of the 221 participants reported drinking alcohol sometimes; 15 (6.8%) drank every day; and 168 (76%) never drank alcohol. For drug use, 211 (96.3%) participants never used drugs in the last 6 months, whereas 7 (3.2%) participants reported using drugs every day; and only 1 (.5%) participant reported using drugs sometimes (n = 219).

Seventy-six (34.4%) participants had been diagnosed HIV-positive less than 1 year. Sixty-nine (31.2%) participants reported being HIV-positive from 1 to 3 years; 43

(19.5%) participants were HIV-positive more than 3 years but less than 7 years; and 33 (14.9%) reported being HIV-positive more than 7 years.

Participants were asked to indicate their sexual preference. Of 221 participants, 208 (94.1%) were heterosexual; 8 (3.6%) were homosexual; and 5 (2.3%) were bisexual. One hundred and seventy-three (78.28%) participants reported having primary partners, whereas 63 (28.51%) reported having casual partners.

Participants were asked whether they disclosed their HIV status to their primary or casual partners by selecting one of three responses (always, sometimes, and never). One hundred and three (51.5%) participants reported always disclosing HIV status to their primary partners; 40 (20%) participants sometimes disclosed; and 57 (28.5%) never disclosed their HIV status. Seventy-nine (68.1%) participants who had casual partners reported that they never disclosed HIV status to their partners; and 18 (15.5%) responded they always disclosed HIV status to their casual partners.

For the history of STDs, participants were asked to select yes or no. If they chose yes, they were asked to write types of STDs they had in the past. Of 220 participants, 142 (64.5%) participants reported they never had a STD, and 78 (35.5%) indicated they had STDs in the past. Only 61 participants reported types of STDs on questionnaires. Gonorrhea was the most common type of STD reported (73%).

For reasons of condom use, 143 (65%) participants indicated using condoms to prevent STD and HIV-reinfection. One hundred and thirty-nine (63.2%) participants reported using condoms to prevent HIV transmission to partners, and 82 (37.3%) participants responded using condoms to prevent pregnancy.

Findings Related to Research Questions

To obtain the answers for all research questions, four self-reported instruments were used. First, the demographic data questionnaire was used to obtain demographic information from the participants. Second, the Stages of Change Algorithm for Condom Use was used to assess participant' intentions and readiness to use condoms. Third, the pro and con scores were measured by using the Decisional Balance for Condom Use questionnaire. Finally, the Self-Efficacy for Condom Use questionnaire was used to measure participants' confidence in their ability to use condoms.

Research Question 1

Research Question 1 asked, "What is the proportion of condom use among HIV-positive Thai men in eastern Thailand with their primary and casual partners?" This question was answered by using descriptive statistics. The distribution of frequencies and percentages of condom use among HIV-positive Thai men with primary and casual partners is presented in Tables 2 and 3.

Table 2 presents reported condom use among HIV-positive Thai men with primary partners during vaginal and anal intercourse. There were 173 participants who reported having vaginal intercourse with their primary partners. Fifty-three percent (n = 87) reported using condoms every time; 21.4% (n = 37) answered sometimes; and 13.3% (n = 23) reported never using condoms with their primary partners. Fifteen respondents reported having anal intercourse with their primary partners. Forty percent of those (n = 6) reported sometimes using condoms during anal intercourse; 26.7% (n = 4) used condoms

Table 2

The Distribution of Frequencies and Percentages of Condom Use Among HIV Population With Primary Partner

Sexual activity	n	%
Vaginal intercourse (n=173)		
Every time	87	50.3
Almost every time	19	11.0
Sometimes	37	21.4
Almost never	7	4.0
Never	23	13.3
Anal intercourse (n=15)		
Every time	4	26.7
Almost every time	1	6.7
Sometimes	6	40.0
Almost never	2	13.3
Never	2	13.3

Note. N = 221. There were some missing data for some items resulting from participants' incomplete responses.

Table 3

The Distribution of Frequencies and Percentages of Condom Use Among HIV Population With Casual Partners

Sexual activity	n	%
Vaginal intercourse (n = 63)		
Every time	33	52.4
Almost every time	8	12.7
Sometimes	12	19.0
Almost never	9	14.3
Never	1	1.6
Anal intercourse (n = 15)		
Every time	5	33.3
Almost every time	2	13.3
Sometimes	6	40.0
Almost never	-	-
Never	2	13.3

Note. N = 221. There were some missing data for some items resulting from participants' incomplete responses.

every time; and 13.3% (n = 2) never used condoms during anal intercourse with their primary partners.

The distribution of frequencies and percentages of condom use during vaginal and anal intercourse among HIV-positive Thai men with casual partners is shown in Table 3. There were 63 men who had vaginal intercourse with their casual partners. Fifty-two percent (n = 33) reported they used condoms every time; 19% (n = 12) reported sometimes using condoms; and 1.6% (n = 1) never used condoms. For anal intercourse, 40% (n = 6) reported they sometimes used condoms; 33.3% (n = 5) indicated every time; 13.3% (n =2) responded they used condoms almost every time; and 13.3% (n =2) never used condoms during anal intercourse with casual partners.

Research Question 2

Research Question 2 asked, " What are the stages of change for condom use during sexual contact among HIV-positive Thai men in eastern Thailand with primary and casual partners?" This question was answered by using descriptive statistics. The results are presented in Table 4.

Table 4 presents the stages of change for condom use among HIV-positive Thai men during sexual intercourse with their primary partners. For vaginal intercourse, the majority of HIV-positive Thai men who used a condom with primary partners were in the maintenance stage, 31.2 % (n =54). Twenty-seven percent (n = 47) were in the preparation stage, 19.1% (n = 33) were in the action stage, 14.5% (n = 25) were in the contemplation stage; and 8% (n =14) were in the precontemplation stage. For anal intercourse,

Table 4

Stages of Change for Condom Use Among HIV Population During Vaginal and Anal Intercourse With Primary and Casual Partners

Sexual activity	Stages of change				
	PC	C	P	A	M
Primary partner					
Vaginal intercourse					
n	14	25	47	33	54
%	8.1	14.5	27.2	19.1	31.2
Anal intercourse					
n	3	2	6	4	-
%	20	13.3	40.0	26.7	-
Casual partner					
Vaginal intercourse					
n	10	3	17	21	12
%	15.9	4.8	27.0	33.3	19.0
Anal intercourse					
n	1	1	8	4	1
%	6.7	6.7	53.3	26.7	6.7

Note. PC = precontemplation, C = contemplation, P = preparation, A = action, and M = maintenance.

the majority of those who used condoms were in the preparation stage, 40% (n = 6), with 26.7% (n = 4) in the action stage. There were 20% (n = 3) in the precontemplation stage and 13.3 % (n = 2) in the contemplation stage. Nobody was found to be in the maintenance stage of condom use during anal intercourse with primary partners.

Of those men using condoms with casual partners during vaginal intercourse, the majority were in the action stage, 33.3% (n = 21). There were 27% (n =1 7) in the preparation stage, 19% (n = 12) in the maintenance stage, 15.9% (n = 10) in the precontemplation stage, and 4.8% (n = 3) in the contemplation stage. For anal intercourse, the majority

of men who used condoms during anal intercourse were in the preparation stage, 53.35 % (n = 8), and 26.7 % were in the action stage.

Research Question 3

Research Question 3 asked, "Are the pattern of self-efficacy, and pro and con scores by stages of change consistent with the TMC?" The Self-Efficacy for Condom Use and Decisional Balance for Condom Use questionnaires were used to obtain self-efficacy and decisional balance (pro and con) scores. Statistics used to answer this question included mean, standard deviation, ANOVA, and MANOVA. Table 5 summarizes the mean scores and standards deviations of self-efficacy, pros, and cons for condom use among HIV-positive Thai men during sexual contact with primary and casual partners.

As presented in Table 5, the possible scores for self-efficacy ranged from 0 to 30. The overall means and standard deviation for self-efficacy scores among HIV-positive men with their primary partners were 19.33 and 5.33, and with casual partners were 18.69 and 4.74. For decisional balance, pros and cons, the possible scores ranged from 0 to 25. The overall mean for the pro scores among those men with a primary partner was 21.46 (SD = 3.09), and with casual partners was 20.39 (SD = 2.94). For the con scores, the overall mean with primary partners was 14.02 (SD = 4.71) and with casual partners was 13.97 (SD = 4.32).

To examine the pattern of self-efficacy across stages of change, the raw scores were converted to T-scores using a mean of 50 and a standard deviation of 10 (Grimley, Prochaska, Velicer, & Prochaska, 1995). Table 6 presents the T-score means and standard deviations for self-efficacy for condom use across stages of change. Overall, the self-

Table 5

Overall Means and Standard Deviations for Self-Efficacy, Pros, and Cons for Condom Use Among HIV Population With Primary and Casual Partners

Variables		Types of partners	
		Primary partner (n = 177)	Casual partner (n = 70)
Self-efficacy			
	M	19.33	18.69
	SD	5.33	4.74
Pros			
	M	21.46	20.39
	SD	3.09	2.94
Cons			
	M	14.02	13. 97
	SD	4.71	4.32

Note. N = 221. There were some missing data resulting from participants' incomplete responses.

Table 6

T-Score Means and Standard Deviations of Self-Efficacy for Condom Use During Vaginal and Anal Intercourse Across Stages of Change Among HIV Population With Primary and Casual Partners

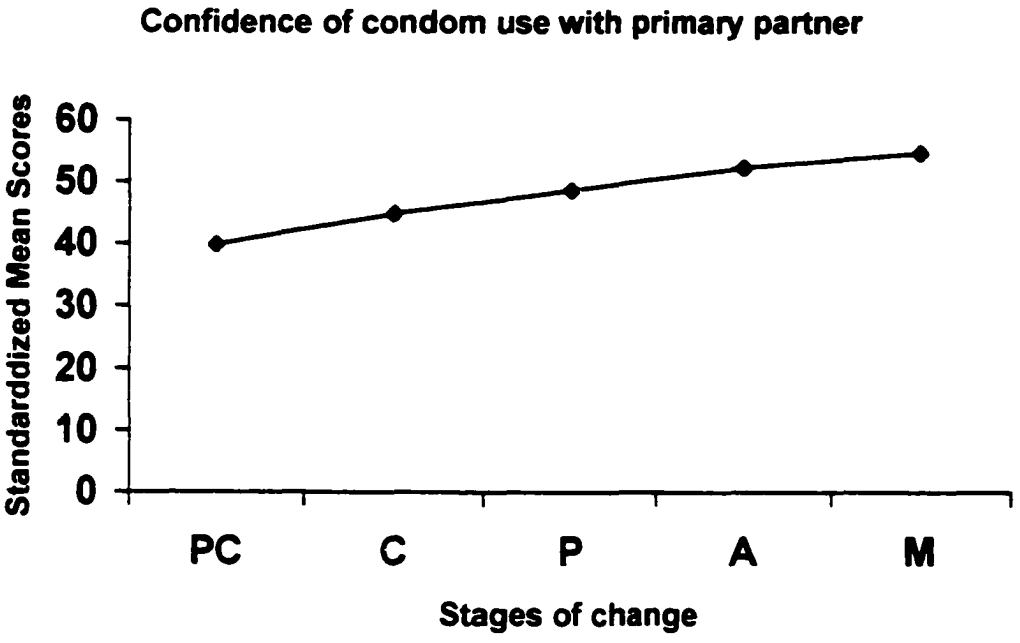
Type of partner	Stages of change				
	PC	C	P	A	M
Primary partner (N = 173)					
n	14	25	47	33	54
M	39.86	44.88	48.62	52.29	54.74
SD	7.95	10.83	8.54	9.05	8.83
Casual partner (N = 63)					
n	10	3	17	21	12
M	42.01	54.88	49.55	52.37	52.60
SD	8.87	7.61	7.94	10.33	12.26

Note. PC = precontemplation, C = contemplation, P = preparation, A = action, and M = maintenance.

efficacy scores for condom use with primary and casual partners increased across stages of change, from precontemplation to contemplation, to preparation, to action, and to maintenance stage. Graphic presentation of self-efficacy across stages of change for condom use with primary and casual partners is shown in Figure 2. It indicates that for condom use with primary partners, self-efficacy was lowest in the precontemplation stage; then it climbed up along stages of change and was the highest in the action and maintenance stages. With casual partners, self-efficacy was lowest in the precontemplation stage, then it climbed up and was highest in the contemplation stage. It then dropped at the preparation stage, and it climbed up again from preparation to action, and to the maintenance stage.

The ANOVA was performed to investigate whether there were differences of self-efficacy scores across stages of change of condom use with primary and casual partners. The ANOVA assumptions were examined to ensure that the normality and homogeneity of variance assumptions were met; the results were satisfactory. The results from ANOVA indicated significant mean differences across stages of change for condom use with primary partners, $n = 172$, $F(4, 168) = 10.903$, $p < .001$. Follow-up Tukey tests were conducted; the results indicated that there were significant differences of self-efficacy between individuals in the precontemplation stage and individuals in the later stages, including preparation, action, and maintenance stages ($p = .013$, $< .001$, and $< .001$, respectively). However, there were no significant mean differences of self-efficacy across stages of change for condom use with casual partners.

For the pros and cons of decisional balance, the T-score means and standard deviations of pros and cons for condom use with primary and casual partners across stages



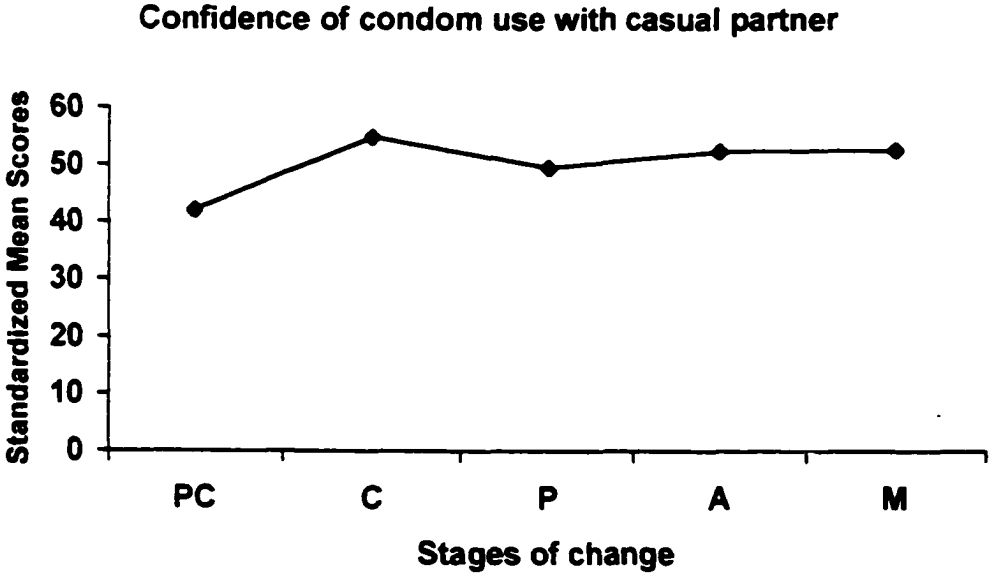


Figure 2. Self-efficacy for condom use with primary and casual partner by stages of change. Precontemplation (PC), contemplation (C), preparation (P), action (A), and maintenance (M).

of change are presented in Table 7. With primary partners, the pro scores increased from precontemplation to contemplation, then dropped in preparation, and then climbed up again, from preparation to action, and to maintenance stage. With casual partners, the pros increased across stage of changes, from precontemplation to contemplation, to preparation, to action, and to maintenance stage. In addition, for condom use with primary and casual partners, the pro scores were lowest in the precontemplation stages and highest in the maintenance stage. In contrast, the con scores for condom use with primary and casual partners decreased across stages of change, from precontemplation to contemplation, to preparation, to action, and to maintenance stage. The con scores were highest in the precontemplation stage and lowest in the maintenance stage.

The T-score means of pros and cons for condom use with primary and casual partners were compared (Figure 3). The results indicated that the cons were higher than the pros in the precontemplation stage; on the other hand, the pros were higher than the cons in the action and maintenance stages. There is a crossover of pro and con scores after the preparation stage. Interestingly, with casual partners, the con scores were close to the pro scores in the contemplation, preparation, and action stage.

A MANOVA was conducted to evaluate whether there were statistically significant differences of pro and con scores across stages of change among those who used condoms with primary partners. Evaluation of assumptions was performed. The assumption of normality was violated for the pros and the cons in the maintenance group. However, the sample size in those cells was more than 20; therefore, normality was assumed (Stevens, 1996; Tabachnic & Fidell, 2001). Also, the assumptions of homogeneity of

Table 7

T-Score Means and Standard Deviations of Pros and Cons for Condom Use During Vaginal and Anal Intercourse Across Stages of Change Among HIV Population With Primary and Casual Partners

Type of partners		Stages of change				
		PC	C	P	A	M
Primary partner (N = 173)						
	n	14	25	47	33	54
Pros	M	46.21	52.01	45.55	52.29	52.90
	SD	8.37	7.11	10.12	9.16	10.82
Cons	M	53.74	51.90	50.54	48.79	47.91
	SD	10.82	10.21	9.52	9.19	10.37
Casual partner (N = 63)						
	n	10	3	17	21	12
Pros	M	41.21	49.82	48.89	51.60	54.64
	SD	6.17	13.74	8.87	11.24	9.41
Cons	M	52.16	50.84	50.61	49.85	43.70
	SD	3.53	7.08	10.79	8.82	12.26

Note. PC = precontemplation. C = contemplation, P = preparation, A = action, and M = maintenance.

variance-covariance matrices, linearity, and multicolinearity were met. Therefore, all assumptions of the MANOVA were satisfactory.

The MANOVA results for condom use with primary partners indicated a significant difference of pros and cons across stages of change, Wilks' lambda = .871, F (8, 334) = 2.975, p = .003. As a follow-up, an ANOVA was conducted to assess the significance difference of the pros and cons of condom use with primary partner. Significant differences of the pros were detected in those who used condoms with primary partners, F (4, 168) = 4.63, p = .001. Follow-up Tukey tests were performed; the results indicated that there were significantly lower pro scores for individuals in the preparation stage

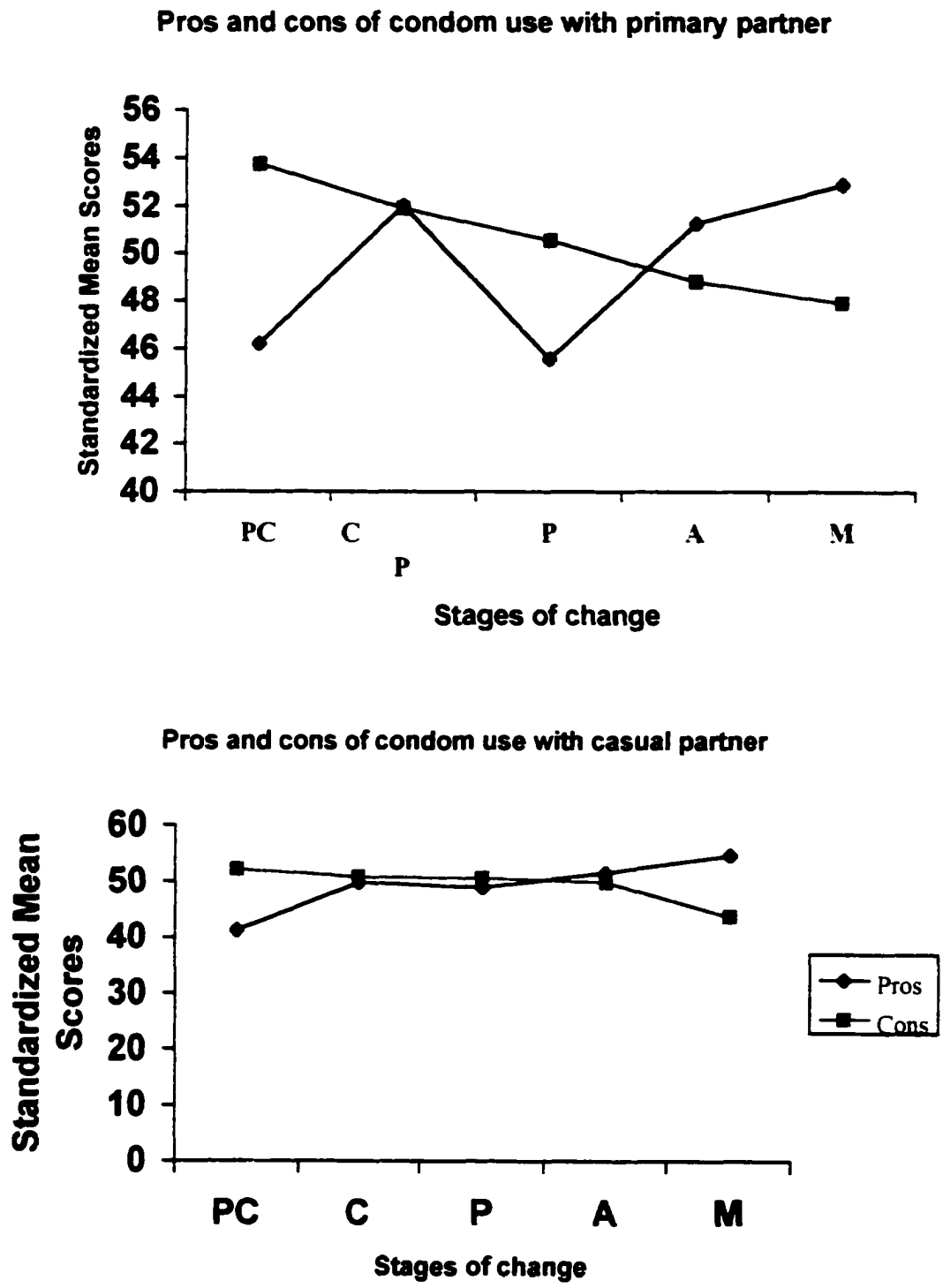


Figure 3. The pros and cons of condom use with primary and casual partner by stages of change. Precontemplation (PC), contemplation (C), preparation (P), action (A), and maintenance (M).

compared with those in the maintenance stage ($p = .001$). There were no significant differences of con scores across the stages of change for condom use with primary partners.

Discriminant analysis was used to determine which variables correctly classify subjects into each stages of change for condom use based on self-efficacy, pros, and cons for condom use. Assumptions for discriminant analyses were tested (same as the assumptions of MANOVA). Table 8 presents the results of discriminant analysis for condom use with primary partner. Two discriminant functions were significant. The first discriminant function accounted for 27.4% of the between group variability, χ^2 (12) = 54.94, $p < .001$; the best predictor for this function was self-efficacy, loading matrix = .97. The second discriminant function accounted for 8.6% of the between group variability, χ^2 (6) = 13.84, $p < .05$; the best predictor for this function was pros of condom use, loading matrix = .92. The best predictor for distinguishing the precontemplators from individuals in the other stages of change (contemplation, preparation, action, and maintenance) was self-efficacy of using condoms; loading matrix = .97. For the second discriminant function, the pros of using condoms was the best predictor for distinguishing the precontemplators and the other groups, loading matrix = .91.

To differentiate the groups based on those two discriminant functions, the group centroids were calculated. The results indicated that on the first function, self-efficacy was the best predictor to distinguish those in the maintenance group from those in the other stages. For the second function, the pros of condom use was the best predictor to differentiate the contemplators from those in other stages.

Table 9 presents the classification rate of individual in each stages of change for condom use. The results indicated that 38.2% of cases were correctly classified from the

Table 8

Predictor Variables Associated With Stages of Change for Condom Use Among HIV-Positive Thai Men During Vaginal Intercourse with Primary Partner

	Structure coefficient	
Variable	D1	D2
Self-efficacy	.97*	-.05
Pros	.37	.92*
Cons	-.36	-.003
Eigen value	.27	.09
Canonical R	.46	.28
Wilks' lambda	.72	.92
Chi-square	54.49	13.84
p	.000	.031

Note. n = 173
* $p < .05$

Table 9

Classification of HIV-Positive Thai Men Among Stages of Change for Condom Use

Stages of change for condom use		Predicted group membership					% Correctly prediction
		PC	C	P	A	M	
Original count [a]	PC	7	4	3	0	0	50
	C	8	7	2	2	6	28
	P	8	10	20	2	7	42.6
	A	0	8	9	3	13	9.1
	M	1	10	11	3	29	53.7
Cross-validated count [b]	PC	7	4	3	0	0	50
	C	9	6	2	2	6	24
	P	8	10	20	2	7	42.6
	A	0	8	9	3	13	9.1
	M	1	10	11	4	28	39.4

[a] 38.2 % of original cases correctly classified
[b] 37.0 % of cross-validated cases correctly classified.

original grouped cases; 37% of cases were correctly classified when using the cross-validation method. According to the original method, over all five groups, 50% of cases (7 out of 14 cases), were correctly classified for the precontemplators and 53.7% (29 out of 54 cases) were correctly classified for individuals in the maintenance group.

For condom use with casual partners, there were small cell sample sizes among groups. Thus, the assumptions of normality and homogeneity of variance-covariance matrices of some variables were not met. Although data were transformed, those assumptions still are violated. Therefore, a nonparametric statistic, Kruskal-Wallis analysis, was used to evaluate the significant differences of pro and con scores across stages of change for condom use with casual partners. The results indicated a statistically significant difference of pros across stages of change, $\chi^2(4) = 12.13$, $p = .016$. The Dunnett's C test was performed to examine the differences among groups, $F(4, 58) = 2.91$, $p = .029$. The findings indicated that pro scores were significantly lower for individuals in the precontemplation stages than those in the action and maintenance stages, $p < .05$. However, there were no significant differences of con scores across stages of change for condom use with casual partners.

Research Question 4

Research Question 4 asked, "What are differences in self-efficacy, and pro and con scores among the stages of change for condom use?" This question was answered by using the results from ANOVA and MANOVA analyses for self-efficacy and pros and cons of condom use.

alcohol use, drug use, and disclosure of HIV status?" Predictive variables included self-efficacy, pros and cons of condom use, age, disclosure of HIV status, alcohol use, and drug use. The outcome variable was stages of change, including precontemplation, contemplation, preparation, action, and maintenance. Since the outcome variable was categorical, each stage of change was dichotomized by using a dummy code. To identify associated variables for each stage of change for condom use, binary logistic regression analyses with enter procedures were performed ($p < .05$). Ten logistic regression models were developed. The chi-square statistic was used to test the overall statistical significance of the model. The Hosmer and Lemeshow goodness-of fit statistic was used to evaluate the model fit, which indicates how well a model matches the actual data. Then, the odds ratio and 95% confidence interval limits were calculated to assess the association between variables and the stages of change dichotomies. The results are presented separately for condom use with primary and casual partners.

Condom use with primary partners and predictors of each stage of change for condom use are presented in Table 10. The results are presented separately for each stage of change.

In precontemplation, the overall predictive model was statistically significant, $\chi^2 = 23.22$, $p < .05$. Self-efficacy for condom use was the significant variable in predicting individuals in this stage. Individuals with low self-efficacy were only three-fourth (odds ratio = .77, 95% CI = .66, .90) less likely to be at higher stages than the precontemplation stage. The overall correct classification rate was 93%.

In the contemplation stage, the overall predictive model was statistically significant, $\chi^2 = 17.52$, $p < .05$. The pros of condom use was the strongest predictor, followed

Table 10
Predictors of Stages of Change for Condom Use with Primary Partners

Variables	Stages of change for condom use														
	PC			C			P			A			M		
	β	Wald	Odds Ratio	β	Wald	Odds Ratio	β	Wald	Odds Ratio	β	Wald	Odds Ratio	β	Wald	Odds Ratio
Self-efficacy	- 26	10.84*	.77	-.16	8.89*	.85	.02	.24	1.02	-	ns	-	.10	6.84*	1 11
Pros	.01	01	99	.25	5.59*	1.28	-.19	7.94*	.83	-	ns	-	.06	.90	1 07
Cons	.08	.96	1.09	.01	.03	1.01	.03	.39	1.03	-	ns	-	-.05	1.73	.95
Age	.06	1.7	1 06	-.04	1.22	.96	.01	.08	1.01	-	ns	-	.02	.52	1.02
Disclosure of HIV status	.14	.04	1.15	.28	.22	1.32	- 06	.02	.96	-	ns	-	-.004	.00	.99
Alcohol use															
Never	-	-	-	-	-	-	-	-	-	-	ns	-	-	-	-
Sometimes	5 89	.04	359 9	-.48	21	.62	.73	.54	2.08	-	ns	-	-1.07	1.66	.20
Every day	6.9	.05	1012. 8	-.15	.02	86	1.60	2.17	4.96	-	ns	-	-1 62	2.62	-
Drug use															
Never	-	-	-	-	-	-	-	-	-	-	ns	-	-	-	-
Sometimes	6 24	.03	513.4	-1.17	1 04	.31	-1 93	3 51	.15	-	ns	-	7 43	.09	1689.6
Every day	- 46	00	64	-.52	.06	.01	5.41	06	222.8	-	ns	-	26	.00	1.30
-2 Log Likelihood	73 68			121.2			179 7			145 9			185.3		
Model chi-square (df=8)	23 22			17.52			21 40			9.79			26.38		
p	006			.041			.01			37			.002		
Overall rate of classification	93%			86.5%			75.4%			83%			70.2%		

Notes, PC = precontemplation, C = contemplatipon, P = preparation, A = action, and M = maintenance, ns = not significant
* p = 05

by self-efficacy was the additional variable that predicted individuals in this stage. Individuals with high pros (odds ratio = 1.28, 95% CI = 1.04, 1.56) and low self-efficacy (odds ratio = .85, 95% CI = .77, .95) more likely to be at the contemplation stage than other stages of change. The overall correct classification rate was 86.5%.

In preparation stage, the overall predictive model was statistically significant, $\chi^2 = 21.40$, $p < .05$. The best variable in predicting individuals in this stage was the pros of condom use. Individuals who view the pros of using condom were .83 (95% CI = .73, .95) times to be in this stage than being in other stages. The overall correct classification rate was 75.4%.

In the action stage, the overall predictive model was not significant ($\chi^2 = 9.79$, $p < .05$. Therefore, no variables were found as significant predictors for this stage.

In the maintenance stage, the overall predictive model was statistically significant, $\chi^2 = 26.38$, $p < .05$. Self-efficacy was the only significant variable in predicting individuals in this stage. Those with high self-efficacy were 1.11 times (95% CI = 1.03, 1.2) more likely to be at maintenance stage than the four lower stages. The overall correct classification rate was 70%.

With casual partners, predictors for each stage of change for condom use are presented in Table 11. The result indicated that only the overall predictive model in the precontemplation stage was statistically significant, $\chi^2(8, \underline{N} = 65) = 20.25$, $\underline{p} < .05$. The pros of condom use was the only significant predictor of inclusion individuals in this stage. Those with low pros of condom use were .62 times (odds ratio = .62, 95% CI = .43, .90) more likely to be at the precontemplation stages than the four higher stages. The overall correct classification rate was 89.2%.

Table 11

Predictors of Stages of Change for Condom Use with Casual Partners

Variable	Precontemplation stage		
	β	Wald	Odds Ratio
Self-efficacy	-.29	.6	.75
Pros	-.48	6.17*	.62
Cons	.07	.31	1.08
Age	-.07	1.59	.93
Disclosure of HIV status	-.05	.00	.95
Alcohol use			
Never	-	-	-
Sometimes	-2.21	1.71	.11
Every day	-.51	.09	.60
Drug use			
Never	-	-	-
Sometimes	7.64	.84	2078.3
Every day	-	-	-
-2 Log Likelihood	32.03		
Model chi-square (df=8)	20.25		
P	.009		
Overall rate of classification	89.2%		

Notes. * p = .05

Summary

In this chapter, the results from data analysis were presented, including demographic and personal behaviors of sample and the findings related to research study.

CHAPTER 5

DISCUSSION

A descriptive study was conducted among HIV-positive Thai men to describe the rate of condom use and the stages of change for condom use during vaginal and anal intercourse with primary and casual partners. The relationships were examined between stages of change for condom use, decisional balance, and self-efficacy for condom use. Predictors of stages of change for condom use were also obtained. Five research questions were examined. Data were analyzed by using descriptive statistics, ANOVAs, MANOVA, and logistic regression analysis.

This chapter summarizes findings and discusses the findings related to the theoretical and conceptual framework. Conclusions are drawn based on the findings, and implications regarding nursing are presented. Finally, recommendations for future research are offered.

Summary of the Findings

The data analysis on 221 HIV-positive Thai men from the outpatient clinics of four regional hospitals yielded the following findings:

1. The demographic characteristics of participants were obtained by self-report questionnaire. All participants were HIV-positive Thai men; the majority was ages 30 to 34 years (34%) and 35 to 39 years (24%). Most of them were married. Forty percent had

completed elementary school. The majority of participants (56%) worked as labors and had low incomes. Sixty-five percent of participants had been HIV-positive less than 3 years. Ninety-four percent were heterosexual men. Seventy-eight percent reported having primary partners, 28% had casual partners, and 10% reported having both primary and casual partners in the last 6 months. Major reasons for using condoms were to prevent STDs and HIV re-infection (65%) and to prevent HIV transmission to their partners (63%).

2. The rate of condom use varied among HIV-positive Thai men during sexual contact with primary and casual partners. Most participants used condoms inconsistently. Only 50% of participants used condoms consistently (every time) during vaginal intercourse with their primary and casual partners. Only 30% of participants used condoms consistently with primary and casual partners during anal intercourse.

3. The stages of change for condom use during vaginal and anal intercourse among HIV-positive Thai men with primary and casual partners were examined. For condom use during vaginal intercourse with primary and casual partners, 50% were in the action and maintenance stage (using condoms every time for 6 months or more than 6 months); 27% were in the preparation stages (currently using condoms sometimes or almost always and intend to use condoms every time in the next 30 days); and 20% were in the precontemplation (not currently used condoms and had no intention to use condoms in the future) and contemplation stages (intend to use condoms in the next 6 months).

For condom use during anal intercourse, approximately 70% were in the early stages of change for condom use with primary and casual partners. Of those 70%, most were in the preparation stage: 40% with primary partners and 53.3% with casual partners.

4. MANOVA and ANOVA were used to examine the differences of self-efficacy, and pro and con scores of condom use during vaginal intercourse with primary and casual partners across stages of change. No analysis of those scores for condom use during anal intercourse was conducted because of the small sample size. It was found that self-efficacy and pro scores of condom use increased across stages of change. Individuals in the higher stages of change had higher self-efficacy and pro scores than those in the lower stages of change. Significant differences in self-efficacy and pro scores of condom use were found between individuals in the lower stages of change and those in the higher stages of change. For condom use with casual partners, self-efficacy and pro scores also increased across stages of change; however, no statistically significant differences were found.

Regarding the pro and con scores at each stage of change for condom use, the cons were higher than the pros for individuals in the precontemplation stages. In contrast, the pros were higher than the cons for those in the maintenance stage. The crossover of pros and cons occurred before individuals moved to the action stage.

5. Logistic regression analysis was used to determine the best predictor for stages of change for condom use. Self-efficacy and the pros were found to be the best predictors to distinguish individuals into different stages of change for condom use with primary partners. With casual partners, only the pros of condom use was the best predictor in predicting individuals in precontemplation stage; no variables significantly predicted those in other stages of change.

Discussion Related to Findings

Research Question 1

Research Question 1 asked, "What is the proportion of condom use during sexual contact among HIV-positive Thai men with primary and casual partners?" Participants were asked how often they used condoms during sexual intercourse with their primary and casual partners. The results indicated that 173 men had primary partners; 63 men reported having casual partners; and 22 men reported having both primary and casual partners. With primary partners, 173 men reported using condoms during vaginal intercourse; whereas 15 out of 173 reported using condoms during anal intercourse. With casual partners, 63 men reported using condoms during vaginal intercourse; whereas 15 out of 63 reported using condoms during anal intercourse. Regarding types of sexual activity, approximately 30% of men who had anal intercourse with either primary or casual partners were less likely to use condoms consistently than those (50%) who had vaginal intercourse with their partners.

The current finding is congruent with results that were reported from several studies. In 1989, Wuthiwan interviewed 300 high-risk men who attended a venereal disease clinic in Chonburi province, Thailand and found that 50.3% (n = 151) of these men inconsistently used condoms when they visited CSWs; whereas 45% (n = 135) of them never used condoms. After visiting CSWs, 19% (n = 24) of these men reported having sexual intercourse with their wives or main partners and 67% (16 out of 24) reported they did not use condoms during sexual intercourse with their partners.

The same result was reported in another study (Grimley, Prochaska, Velicer, & Prochaska, 1995) that was conducted to assess condom use adoption in 248 heterosexu-

ally active college men and women. Only 39.85% of these students reported using condoms with their main partners to prevent pregnancy and diseases.

De Gruiter (1997) examined the rate of condom use among male factory laborers in Nakhornpathom, Thailand. The findings showed that 76% of these men consistently used condoms with other CSWs, but only 56% consistently used condoms with regular partners.

In 2000, Semple and colleagues examined the rate of condom use among 133 HIV-positive gay and bisexual men who had sexual contact with steady, casual, and anonymous partners. The findings showed that men with steady partners (52.8%) and men with anonymous partners (84.2%) had the least consistent condom use during anal intercourse.

In addition, in this study, the percentage of HIV-positive Thai men who consistently used condoms with their casual partners was higher than those who used condoms with their primary partners. The reasons of consistent condom use with casual partners may include preventing HIV, STDs re-infection, and pregnancy. These reasons were also reported in the study of condom use among those who had sex with casual partners in many studies (De Gruiter, 1997; Hayes, Kegeles, & Coates, 1997; McLean et al., 1994; Wuthiwan, 1989). The results from this study, as shown in Table 1, also revealed that major reasons for using condoms among HIV-positive Thai men were to prevent STDs and HIV re-infection (65%) and to prevent pregnancy (37.3%).

The finding of this study is contrary to the study of O'Campo and colleagues (1999). The investigators examined the readiness to use condoms and contraception among 3,784 women, including high-risk and HIV-positive women. The results indicated

that HIV-positive women more consistently used condoms with primary partners (57%) than with casual partners (41%). In the present sample, HIV-positive individuals may have consistently used condoms with primary partners in order to prevent HIV transmission to their partners. In this study, also, indicated that 50.3% (87 out of 173) of HIV-positive Thai men used condoms every time during vaginal intercourse with their primary partners. One reason that they reported for using condoms was to prevent HIV transmission to their partners (63.2%). For those who reported inconsistent condom use with primary partners (49.7%), the reason could be their partners also had the same serostatus; however, this information was not available in this study. Therefore, they may have thought it was not necessary to use condoms during sexual contact with partners. This is a misunderstanding that can be found among HIV-positive individuals. They do not consider that they could contract more HIV and that it would hasten the progression of their disease.

For those who had anal intercourse, the findings revealed that over 60% of those men inconsistently used condoms with primary and casual partners. This finding is contrary to that of Semple and colleagues (2000). They examined the rate of condom use among 133 HIV-positive gay and bisexual men with steady, casual, and anonymous partners. The findings indicated that men with anonymous partners (84.2%) had the most unprotected anal intercourse. However, the current finding is congruent with Gullette's (1998) study. The investigator examined the rate of condom use among gay and bisexual men by using self-report questionnaire; 73% of men with casual partners reported significantly more consistent condom use than did those with primary partners.

In this study, HIV-positive Thai men had more unprotected anal intercourse than unprotected vaginal intercourse. This may be because they did not consider that those who perform unprotected anal intercourse are more likely to contract HIV than those who have unprotective vaginal intercourse. Furthermore, they may think that because they were already HIV-positive, it was useless to use condoms. Other reasons that were related to unprotected anal intercourse may be the attractiveness of partners and the experience of unprotected anal intercourse (Gulton, 1998).

In conclusion, approximately 50% of HIV-positive Thai men in this study inconsistently used condoms during vaginal intercourse with their partners (primary and casual partners). Furthermore, the percentage of inconsistent condom use increased when anal intercourse was performed. There is no doubt that the HIV was passed from these men to their partners even if they did not use condoms only one time. It is necessary to promote consistent condom use among HIV-positive individuals to prevent increased HIV transmission.

Research Question 2

Research Question 2 asked, "What are the stages of change for condom use during sexual contact among HIV-positive Thai men with primary and casual partners?" Participants were asked to respond to the Stage Algorithm for Condom Use questionnaire. The findings indicated that the majority of HIV-positive Thai men (50.3%) who had vaginal intercourse with primary partners were in the action (using condoms every time but less than 6 months) or maintenance stages (using condoms every time more than 6 months) of change for condom use, and 27.2% were in the preparation stage (currently

using condoms almost every time). However, among those who had anal intercourse with their primary partner, the majority of them (40%) were in the preparation stage and 26.7% were in the action stage.

For those who reported having sex with casual partners, the results revealed that 52.3% of men who had vaginal intercourse were in the action or maintenance stages and 27.9% were in the preparation stage. For those who had anal intercourse, the majority of them (40%) were in the preparation stage, with 32% in the action or maintenance stages.

The results reflect that these men believed that using condoms during sexual contact with their partners was useful. In addition, using condoms can reduce the risk of HIV infection at least 10 times compared with not using condoms (Carey et al., 1992; Porche, 1998). For example, the results from many studies revealed that the rate of seroconversion among serodiscordant couples who consistently used condoms during sexual contact ranged between 0% and 2.4% (De Vincenzi, 1994; Saracco et al., 1993).

The current finding is consistent with the study of O'Campo and colleagues (1999). They assessed condom and contraceptive use among high-risk and HIV-positive women, and reported that the majority of HIV-positive women were in the action or maintenance stages of change for condom use during vaginal intercourse with their primary and casual partners.

On the other hand, the other half of HIV-positive Thai men in this study reported that they were in the early stages of change for condom use during vaginal and anal intercourse with primary and casual partners; in other words, they were inconsistent condom users. These men may realize only the cons of using condoms and not the pros. They may perceive themselves at low risk for contracting HIV and also think that because they al-

ready had HIV, it is not important to use condoms during sexual contact. Also, they may have less chance to expose themselves to health information; thus, they were undereducated about HIV transmission. Another reason for inconsistent condom use, especially with primary partners, was that they may have a long-term relationship with a partner who has the same serostatus, being HIV-positive partners. Therefore, they were less likely to use condoms during sexual contact with the primary partners.

The results from this study are contrary to the findings from many studies. The investigators reported that 63% to 92% of those who had high-risk sexual behaviors--including injecting drug users, having multiple sexual partners, and having unprotected sex--were in the early stages of change (precontemplation, contemplation, and preparation stages) (Brown-Peterside et al., 2000; Bowen & Trotter, 1995; Galavotti et al., 1995; Grimley, Prochaska, Velicer, & Prochaska, 1995).

Another interesting finding in this study is that those who were inconsistent condom users during vaginal and anal intercourse with primary and casual partners were in the preparation stage. That means they currently used condoms almost every time and had intentions to use condoms every time in the next 30 days. This also reflects that they realized the pros of using condoms during sexual intercourse with their partners. These men were ready to move to the higher stages of change for condom use (action and maintenance stages) if they get the appropriate encouragement. However, they may move to a lower stage as well. There are many reasons that these men sometimes inconsistently used condoms: condom unavailability; partner incooperation; alcohol and drug use; not feeling confident using condoms; and the cons of using condoms, such as feeling unnatural, slowing down the desire, and feeling itchy.

In conclusion, half of HIV-positive Thai men in this study were in the action and maintenance stages of change for condom use during vaginal intercourse with primary and casual partners. The other half were inconsistent condom users during vaginal intercourse with primary and casual partners and were in the preparation stage. For those who had anal intercourse, with either primary or casual partners, the majority of them were in the preparation stage. Using the TMC in this study is useful; it helps to assess individuals' intention and readiness to adopt condom use behavior during sexual contact. Also, individuals were classified into different stages based on their intention and readiness to change behavior. Therefore, health care providers can provide the appropriate strategies that match with individuals' readiness to change.

Research Questions 3 and 4

Research Question 3 was "Are the pattern of self-efficacy and pro and con scores by stages of change consistent with the TMC?" Research Question 4 was "What are differences in self-efficacy, and pro and con scores among stages of change for condom use?" According to the TMC, the self-efficacy scores increase linearly along the stages of change, from precontemplation to contemplation, to preparation, to action, and to the maintenance stage. Self-efficacy scores are the lowest for individuals in the precontemplation stage and the highest for those in the action and maintenance stage. For decisional balance (pros and cons), the pros increase across stages of change. The pros are lowest in the precontemplation stage and highest in the maintenance stage. On the other hand, the cons are highest in the precontemplation stage and lowest in the maintenance stage. The

cross-over of the pros and cons occurred, with the pros higher than the cons, before individuals move to action stage (Prochaska & Velicer, 1997).

The results in this study showed that the pattern of self-efficacy and pros and cons across stages of change for condom use among HIV-positive Thai men during vaginal intercourse with their primary and casual partners was consistent with the TMC.

Self-efficacy. Self-efficacy for condom use represents individuals' confidence of using condoms with their partners during sexual intercourse in different situations. The results in this study showed that self-efficacy for condom use among HIV-positive Thai men during vaginal intercourse with primary partners increased along stages of change. Self-efficacy was lowest among individuals in the precontemplation stage and highest among those in the maintenance stage. Also, there were statistically significant differences of self-efficacy scores between individuals in the precontemplation stage and those in the preparation, action, and maintenance stages. With casual partners, self-efficacy also increased across stages of change. Self-efficacy scores were lowest for individuals in the precontemplation stage. However, the highest scores were found among individuals in the contemplation stage instead of the maintenance stage as is reported in the TMC. In this study, there were no significant differences of self-efficacy scores across stages of change. This result is different from what is presented in the TMC. It can be explained because there was a small sample size in these groups ($n = 63$). Furthermore, cell sizes for each of the stages were small; only 3 participants were classified as contemplators. Other reasons that affected the confidence of these men in using condoms with casual partners may be that these men viewed the cons of using condoms rather than the pros.

Overall, the results showed that the pattern of self-efficacy for condom use among HIV-positive Thai men during vaginal intercourse with primary and casual partners was consistent with the TMC and previous studies. Individuals with strong confidence to use condoms with partners were more likely to consistently use condoms and are in the higher stages of change (action and maintenance stages). This finding was supported by the TMC and other studies.

Brien and Thombs (1994) reported that college students who were not condom users were less confident in their ability to discuss and to insist on condom use with a sexual partner. Likewise, Soler et al. (2000) reported that low-income American women with high scores on condom-related self-efficacy and strong confidence in one's ability to negotiate condom use were consistent condom users. In a study with similar findings, Delamater et al. (2000) found that among Black American male adolescents, there was an association between self-efficacy to use a condom and the frequency of using a condom; when self-efficacy for condom use was high, the percentage of condom use increased. Also, Polacsek et al. (1999) reported that individuals who had greater condom use self-efficacy with partners were more likely to be in higher stages of change.

Decisional balance (pros and cons). The balancing of pros and cons for condom use among HIV-positive Thai men was related to the decision of using condoms. The results in this study showed that the pros of condom use with primary partners were lowest in the preparation stage and highest in the maintenance stage. The pros increased from precontemplation to contemplation stages, then dropped at the preparation stage and increased from preparation to action and to maintenance stages. There were significantly

lower scores for individuals in the preparation stage than those in the maintenance stage. This finding is slightly different from what was presented in the TMC, which proposes that the pros increase along stages of change, from precontemplation to contemplation, to preparation, to action, and to the maintenance stage. The pro scores were lowest for individuals in the precontemplation stage and highest in the action and maintenance stage (Prochaska et al., 1994). This result may be affected by the small cell sample sizes in the precontemplation and contemplation stages (n = 14, 25). With casual partners, the pro scores increased from precontemplation to contemplation, then dropped in the preparation stage, and increased again from preparation to action, and to maintenance. However, the pros were lowest in the precontemplation stage and highest in maintenance. Significant differences of pros were found between individuals in the precontemplation and maintenance stages.

In contrast, the cons of condom use with primary and casual partners tended to decrease along stages of change. The cons were highest among individuals in the precontemplation stage and lowest in the maintenance stage. However, there were no significant differences of the con scores among individuals in each stage of change. In addition, the cons outweighed the pros for individuals in the precontemplation stage, but the pros outweighed the cons for those in the maintenance stage. The crossover of the pros and cons occurred before individuals moved to action stage. These findings are consistent with the TMC.

Overall, the pattern of pros and cons across stages of change for condom use in this study was consistent with the TMC. This result was also supported by earlier studies such as the study of 12 problem behaviors (Prochaska et al., 1994), condom use adoption

studies in a variety of populations, including women at risk for HIV infection (Grimley et al., 1992; Galavotti et al., 1995) and college students (Grimley, Prochaska, Velicer, & Prochaska, 1995; Grimley, Riley et al., 1993).

In conclusion, the pattern and relationships of self-efficacy, and pros and cons of condom use across stages of change in the present study were consistent with the TMC and previous studies. Self-efficacy and the pros of condom use with primary and casual partners increased along stages of change, and the cons tended to decrease across stages of change. However, condom use with casual partners among HIV-positive Thai men in this study was problematic. Although self-efficacy and pro scores were high in the later stages of change, the cons did not significantly decrease; they were still high in the later stages of change. Furthermore, there were no significant differences in self-efficacy and con scores across stages of change. This finding suggested that subjects perceived fewer benefits of using condoms with casual partners. Also, the risk of discontinuing condom use among those in the action and maintenance stage may occur; however, individuals in the early stage may not move to the higher stage of change for condom use. Inconsistent condom use among HIV-positive with partners will increase the epidemic of HIV transmission. Therefore, it is important to help individuals move from the early stages to the higher stage of change, adopting and maintaining condom use. Intervention should focus on increasing confidence, diminishing the cons, and enhancing the benefits or the pros of using condoms. Maintaining consistent condom use requires cognitive and emotional motivation. The intervention should focus not only on individuals but also on their partners and the community. In addition, when individuals have high confidence, view the

pros of using condoms rather than the cons, and have the consistent intervention and motivation, condom use adoption and maintenance will occur.

Research Question 5

Research Question 5 asked, "Which of these variables are the best predictors for stages of change for condom use: decisional balance (pros and cons), self-efficacy, age, alcohol use, drug use, and disclosure of HIV status?" The results showed that two predictors, self-efficacy and the pros, were significantly associated with stages of change for condom use during vaginal intercourse with primary partners. Self-efficacy was negatively associated with individuals in the lower stages of change, precontemplation and contemplation, but positively associated with those in the maintenance stage. The pros were positively associated with individuals in the contemplation stage but negatively associated with those in the preparation stage. With casual partners, only the pros were negatively associated with being a precontemplator for condom use during vaginal intercourse. No variables were found significantly associated with individuals in the later stage.

In the present study, self-efficacy was associated with consistent condom use with primary partners. This finding was supported because individuals who had high confidence to use condoms were more likely to be consistent condom users (Delamater et al., 2000; Soler et al., 2000). Likewise, other investigators reported that there was a strong relationship between self-efficacy for condom use and stages of change. Individuals with the lowest levels of confidence for using condoms were found in the precontemplation stage, and those with highest levels of confidence were in the maintenance stage (Bowen

& Trotter, 1995; Galavotti et al., 1995; Grimley, Prochaska, Velicer, & Prochaska, 1995; Gullette, 1998). Also, Polacsek et al. (1999) reported that Blacks who had greater condom use self-efficacy with primary partners were associated with more advanced stages of change for condom use.

The pros of using condoms was another predictor for stage of change in the present study. Understanding the usefulness of using condoms helps individuals decide to adopt consistent condom use behavior. Individuals who believed that using condoms was useful were more likely to be consistent condom users; on the other hand, those who saw negative aspects of using condoms were less likely to be consistent condom users (Gullette, 1998; Knodel, 1995; Mnyika & Kvale, 1995; Wuthiwan, 1989). Major advantages of using condoms reported included preventing pregnancy and disease transmission, including STDs and HIV. The findings showed that the pros were a strong predictor for contemplation and preparation stages. This finding is supported by a previous study. Bowen and Trotter (1995) reported that the pros of condom use were an important element for predicting individuals who will move into a stage higher than the precontemplation stage. Likewise, Grimley, Prochaska, Velicer, & Blaise et al. (1995) reported that the pros of condom use was lowest in the precontemplation stage and increased along stages of change.

With casual partners, the pros of condom use was the best predictor for the stage of precontemplation stage, but there was a negative relationship between these variables. No other variables were found to predict the other stages of change for individuals. This finding is similar to that reported by other investigators who found that individuals recognized the pros of using condoms with casual partners, especially the prevention of

contracting diseases (Gomez & Marin, 1996; Knodel, 1995; Wuthiwan, 1989). The finding in this study indicated that 65% of participants reported using condoms with partners to prevent STDs and HIV re-infection. Thus, those who used condoms with casual partners were in the higher stages of change for condom use with casual partners, but were in the lower stages of change with primary partners (Bowen & Trotter, 1995; Grimley, Prochaska, Velicer, & Prochaska, 1995; Gullette, 1998; Schnell et al., 1996). However, the finding in this study showed no study variables that predicted other stages of change for condom use with casual partners.

No selected variables, including age, alcohol and drug use, and disclosure of HIV status, were significantly associated with stages of change for condom use during vaginal intercourse with primary and casual partners. These findings are consistent and congruent with findings from previous studies (Collins, 2000; Gullette, 1998; Nyamathi & Lewis, 1995; Wuthiwan, 1989).

The findings from a previous study (Gullette, 1998) showed that there was a relationship between age and stages of change for condom use. Gullette reported that older bisexual and gay men were more likely to use condoms during sexual intercourse with primary partners and that they were in the higher stages of change. However, other investigators reported that younger individuals were more likely to consistently use condoms with their partners; thus, they were likely to be in the higher stages of change (Bowen & Trotter, 1995; Collins, 2000; Grimley et al., 1997). The current findings are contrary to these findings but are consistent with what was reported in some previous studies (Gomez & Marin, 1996; Gulton, 1998; Khaing, 1998) that there was no relationship between age and condom use behavior.

Using drugs and alcohol decreases functions of the nervous system. Individuals who use drugs and alcohol have poor decision-making skills; they easily lose motor co-ordination; therefore, they inconsistently and ineffectively use condoms. Findings from the literature have shown that there are relationships between drug use and inconsistent condom use behavior (Collins, 2000; Khalsa et al., 1992; Nutbeam et al., 1991; Nyamathi & Lewis, 1995). Also, there were reports that using alcohol was associated with inconsistent use or not using condoms at all (De Gruiter, 1997; Maticka-Tyndale et al., 1997; Wuthiwan, 1989). Such findings are contrary to the findings in this study. However, HIV-positive men in this study reported low confidence scores of using condoms when they used drugs or alcohol. The result may be affected by social desirability; participants may have not reported use of drugs or alcohol. Another reason may relate to the small sample size of the study and the participants' unwillingness to answer some questions truthfully.

The findings in this study showed that there was no relationship between disclosure of HIV status and stages of change for condom use. This finding is contrary to the study among HIV-positive people conducted by Niccolai and colleagues (1999). They reported that HIV-positive individuals who consistently used condoms were 2.70 times more likely to have disclosed their HIV status than those who inconsistently used condoms. In addition, HIV-positive individuals were more likely to disclose their HIV status to their close friends and partners (Wolitski et al., 1998). The findings in this study showed that 51.5% of HIV-positive Thai men disclosed their HIV status to primary partners, whereas 68.1% of those who had casual partners never disclosed their HIV status to their casual partners.

In summary, the rate of disclosure of HIV status to primary and casual partners in this study was approximately 50% to 60%, whereas the rate of disclosure of HIV status in other populations ranged from 50% to 95% (Marks et al., 1994; Schnell et al., 1992; Simoni et al., 1995; Sowell et al., 1997). The reasons for not disclosing HIV status may include fear of discrimination or rejection, protection of loved ones, and confidentiality concerns (Gielen et al., 1997; Hayes, et al., 1993; Yoshioka & Schustack, 2001).

In conclusion, the best predictors for stages of change for condom use during vaginal intercourse with primary partners were self-efficacy and pros for condom use. The best predictor for the precontemplation stage for condom use during vaginal intercourse with casual partners was the pros of condom use. No variables were found as the predictors for the later stages. The results from the study suggest that any attempt to help individuals adopt consistent condom use behavior must consider their readiness to use condom. Also, increasing self-efficacy and pros of condom use must match with the stages, or their readiness, to change.

Limitations

Limitations of the study are as follows. First, the generalizability of the findings is limited because of the small sample size, use of clinical based-population, and use of a cross-sectional design. Second, data collection was based on self-reports and focused on sexual behavior, which is a sensitive topic in Thai culture. Therefore, data obtained may have been biased related to social desirability. Finally, this study was conducted using multi-site settings. Thus, participants' responses may be affected by the some extraneous variables such as setting environments.

Conclusions

Based on the findings from this study, the following conclusions are made.

1. The proportions of condom use among HIV-positive Thai men during vaginal and anal intercourse with primary and casual partners were varied. Only 50% of these men used condoms every time during vaginal intercourse with their primary and casual partners. However, the proportions of those using condoms every time during anal intercourse with primary and casual partners were low, 26% and 33%, respectively.

2. HIV-positive Thai men who used condom during vaginal intercourse with primary partners were more likely to be in the maintenance stage (31.2%) and preparation stage (27.2%). With casual partners, they were more likely to be in the action stage (33.3%) and preparation stage (27%). During anal intercourse, the majority of HIV-positive Thai men were in the preparation stage of change for condom use with primary and casual partners.

3. The pattern and relationship of self-efficacy, and pros and cons along stages of change are consistent with the TMC. The self-efficacy of condom use with primary and casual partners increased across stages of change. With primary partners, self-efficacy was lowest in the precontemplation stage and highest in the maintenance stage. Significant differences were found in self-efficacy scores between those in the precontemplation and those in the preparation, action, and maintenance stages. With casual partners, self-efficacy was lowest in precontemplation stage; however, no statistically significant differences were found among this group.

For decisional balance, the pros for condom use with primary and casual partners increased across stages of change. The pro scores were lowest in the precontemplation stage and highest in the maintenance stage. With primary partners, significant differences in pro scores were found between those in the preparation and maintenance stages, but with casual partners, significant differences were found between the precontemplation and maintenance stages.

The cons tended to decrease along stages of change for both primary and casual partners. The con scores were highest in the precontemplation and lowest in the maintenance stages; however, there were no significant differences among the stages of change. In addition, the cons outweighed the pros in the precontemplation stage, and the pros outweighed the cons in the maintenance stage. The crossover of pros and cons occurred before the action stage.

4. The variables that were significant in predicting the stages of change for condom use during vaginal intercourse among HIV-positive Thai men with primary partners were self-efficacy and pros for condom use. Self-efficacy was negatively associated with individuals in the precontemplation and contemplation stages, but positively associated with the maintenance stage. This finding suggested that HIV-positive Thai men with high self-efficacy for condom use were in the higher stage of change, whereas those with low self-efficacy were in the lower stage of change.

With casual partners, only the pro scores were significant in predicting individuals in the precontemplation stage for condom use. The pros were negatively associated with individuals in the precontemplation stage. The finding suggested that individuals with

low pro scores of condom use were in the lower stage of change. For other stages, no variables were found to predict the stage of change.

Implications

The implications from this study relate to nursing research, nursing practice, and nursing education. Each of these groups of implications is discussed.

Implications for Nursing Research

The findings of this study showed that only self-efficacy and pros of condom use were significant in predicting stages of change for condom use during vaginal intercourse among HIV-positive Thai men with primary partners. With casual partners, only the pros of condom use were found to be significant variables in predicting individuals in the pre-contemplation stage. This finding suggested that other variables may influence the prediction of an individuals' stage of change for condom use. In addition, the sample size in this study was small, and they were a clinical-based sample. These facts may influence the results of the study as well. Therefore, further studies are needed to include more variables and alternative populations, such as a community-based population and a large sample size.

Implications for Nursing Practice

The findings in this study showed that approximately 50% of HIV-positive Thai men were in the lower stages of change for condom use (precontemplation, contemplation, and preparation) during vaginal intercourse with primary and casual partners. Sev-

enty percent of those who had anal intercourse with primary and casual partners were in the lower stages of change. Although some HIV-positive Thai men in this study were in the higher stages of change, relapse can occur. Thus, those men can pass on HIV to their partners, resulting in an increase in the number of HIV-positive people. Furthermore, approximately 48% of these men sometimes or never disclosed their HIV status to primary partners, and 68% never disclosed HIV status to casual partners. There is an urgent need to encourage this population to adopt and sustain condom use in order to prevent the spread of HIV. On the basis of the results, self-efficacy and pros of condom use were the best predictors for individuals in the higher stage of change for condom use with primary partners. With casual partners, the pros of condom use were the best predictor. Therefore, an intervention program for this population should focus on self-efficacy and pros for the primary partner. With casual partners, the intervention should focus more on increasing the pros of condom use. Once these men realize the pros of condom use and had confidence in using condoms, consistent condom use behavior will be adopted and sustained.

Using the TMC is useful; it helps to assess individuals' intention and readiness to consistent condom use. As the results in this study show, HIV-positive Thai men were in different stages of change for condom use. Therefore, interventions or strategies to move individuals from one stage to higher stages must be designed to match the individuals' readiness to change.

Implications for Nursing Education

The findings of this study can be used directly to teach nurses and nursing students about factors influencing condom use adoption and maintenance behavior. Also,

nurses need to know how to provide information about HIV prevention and transmission to patients and their family. Furthermore, nurses need to know how to assess individuals' readiness to change problem behaviors and how to provide information and strategies that match individuals' readiness to change. Therefore, behavioral change theories should be included in the nursing curriculum in order to help nurses and nursing students understand basic concepts about changing behaviors. Also, workshops or training programs about HIV prevention and behavior change strategies should be continuously provided to nurses. Then, nurses and nursing students can provide the appropriate strategies to help clients change their problem behaviors for better health.

Recommendations

The following recommendations are derived from the findings of this study.

1. Replicate the study using community-based populations as well as populations from other geographic areas of Thailand so that the results of the study can be generalized.

2. Conduct another study using other samples such as high-risk groups, college students, or the general population.

3. Conduct a longitudinal study to examine whether the stages of change for condom use are consistent.

4. Conduct a qualitative study to identify other predicting variables for stages of change for condom use.

5. Develop a stage-matched intervention program for condom use adoption and maintenance.

6. Conduct intervention research based upon the stage-matched program for individuals.

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APPENDIX A

APPLICATION OF THE TRANSTHEORETICAL MODEL TO CONDOM USE

Dear Participants:

My name is Khemaradee Masingboon. I am a doctoral nursing student at the School of Nursing, the University of Alabama at Birmingham. I am conducting a study about condom use among sexually active Thai men such as yourself. I would appreciate your participation.

You are being asked to take 15 to 30 minutes of your time to answer a questionnaire. Some questions involve your sexual behavior. Your response will be kept confidential and you will not be identified by name or any codes. The information obtained will be analyzed and presented as group data.

This information will assist nurses to understand condom use behavior among HIV-positive people, and the finding will be used to develop an intervention program for HIV-positive persons aimed at preventing sexually transmitted diseases such as HIV.

Your decision to participate in this study is absolutely voluntary. You are free not to respond to any items that you feel uncomfortable with and you are free to withdraw from the study at anytime prior to completion of the questionnaire. Your refusal will in no way affect the services you receive from the clinic. Answering all questions indicates your willingness to participate in this study.

Thank you for considering my request.

Sincerely,

Khemaradee Masingboon, R.N.

Direction:

The questionnaire consists of 10 sections. Please carefully read directions and questions of each section. You may be directed to skip to different questions or different sections of the questionnaire. Please write a mark, X, or indicate your answers according to which choice best describes your situation. Please be truthful with your responses.

Definition of Term:

The following term is defined for this study.

Partner: Individual(s) with whom you usually have or have had sexual relationship. There are two types of partner, primary partner and other partner.

Primary partner refers to your wife or your steady sexual partner.

Casual partner refers to anyone other than your wife or your steady sexual partner.

Section 1

The following questions are to obtain additional information about yourself. For each question, please indicate by marking, X, which choice best describes your situation. Please answer every question.

1. How long have you had HIV?
   ( ) less than 1 year
   ( ) more than 1 year but less than 3 years
   ( ) more than 3 year but less than 7 years
   ( ) more than 7 years
2. Did you have sexual intercourse during the past 3 months?
   ( ) Yes
   ( ) No
3. How many sexual partners have you had during the past 3 months?
   ( ) none
   ( ) 1-5
   ( ) 6-10
   ( ) 11-15
   ( ) 16-20
   ( ) over 20
4. What is the sex of your partners?
   ( ) Only female
   ( ) Only male
   ( ) Both female and male
5. Do you inform your main partner of your HIV status?
   ( ) Yes
   ( ) No
6. Do you inform your casual partner(s) of your HIV status?
   ( ) Yes
   ( ) No

( ) Sometimes

7. Have you ever had a sexually transmitted disease other than HIV?

( ) Yes What type of sexually transmitted disease did you have? [ ]

( ) No

8. Have you ever drunk alcohol before having sexual intercourse with your partners?

( ) Yes

( ) No

( ) Sometimes

9. Have you ever used drugs before having sexual intercourse with your partners?

( ) Yes

( ) No

( ) Sometimes

10. For what reason do you use condom? (you can select more than one answer)

( ) To prevent pregnancy

( ) To prevent sexually transmitted diseases to your partner

( ) To prevent HIV transmission to your partner

( ) To prevent me from infection or re-infection

Section 2 **Condom use with Primary Partner**

1. Do you have a primary or steady sex partner?

_____ 1) Yes

_____ 2) No (Skip to section 6)

2. How long have you been with your primary partner?

_____ 1) 1-6 months

_____ 2) more than 6 months but less than 1 year

_____ 3) more than 1 year but less than 3 years

_____ 4) more than 3 years but less than 5 years

The following questions are about **vaginal sex with primary partner**. After you answer the items, skip or answer as directed. If you do not participate in vaginal sex, please skip to Section 3 of questionnaires.

3. When you have vaginal sex with your primary partner, how often do you use a condom?

_____ 1) Every time (Skip to Question 4 below)

_____ 2) Almost every time (Skip to Question 5 below, do not answer question 4)

_____ 3) Sometimes (Skip to Question 5 below, do not answer question 4)

_____ 4) Almost never (Skip to Question 5 below, do not answer question 4)

_____ 5) Never (Skip to Question 5 below, do not answer question 4)

4. How long have you been using a condom **every time** you have vaginal sex with your primary partner?

_____ 1) 30 days or less (skip to section 3, do not answer question 5, 6)

_____ 2) More than 30 days – less than 6 months (skip to section 3, do not answer question 4)

_____ 3) Six months or more (skip to section 3, do not answer question 4)

5. Do you intend to start using condoms **every time** you have vaginal sex with your primary partner in **the NEXT 6 MONTHS**?

_____ 1) No (skip to section 3, do not answer question 6)

_____ 2) Yes

6. Do you intend to start using condoms **every time** you have vaginal sex with your primary partner in **the NEXT 30 DAYs**?

_____ 1) No

_____ 2) Yes

Section 3 **Condom use with Primary Partner (Anal Sex)**

The following questions are about **anal sex with primary partner**. After you answer the items, skip or answer as directed. If you do not participate in anal sex, please skip to Section 4 of questionnaires.

1. When you have anal sex with your primary partner, how often do you use a condom?

_____ 1) Every time (Skip to Question 2 below)

_____ 2) Almost every time (Skip to Question 3, do not answer question 2)

_____ 3) Sometimes (Skip to Question 3, do not answer question 2)

_____ 4) Almost never (Skip to Question 3, do not answer question2)

_____ 5) Never (Skip to Question 3, do not answer question 2)

2. How long have you been using a condom **every time** you have anal sex with your primary partner?

_____ 1) 30 days or less (skip to section 4, do not answer question 3, 4)

_____ 2) More than 30 days – less than 6 months (skip to section 4, do not answer question 3,4)

_____ 3) Six months or more (skip to section 4, do not answer question 3,4)

3. Do you intend to start using condoms **every time** you have anal sex with your primary partner in the **NEXT 6 MONTHS**?

_____ 1) No (skip to section 4, do not answer question 4)

_____ 2) Yes

4. Do you intend to start using condoms **every time** you have anal sex with your primary partner in the **NEXT 30 DAYs**?

_____ 1) No

_____ 2) Yes

Section 4 **Confidence -- Primary Partner**

Using the following scale of 1 = Not at all confident to 5 = Extremely confident, how confident (sure) are you that you could use a condom with your primary partner every time you have sex in the following situations.

1=Not at all confident 2=Not confident 3=Unsure 4=confident 5=Extremely confident

How confident are you:

1. When you have been using alcohol?	1☐	2☐	3☐	4☐	5☐
2. When you have been using drugs?	1☐	2☐	3☐	4☐	5☐
3. When you are sexually aroused?	1☐	2☐	3☐	4☐	5☐
4. When you think your partner might get mad?	1☐	2☐	3☐	4☐	5☐
5. When you think your partner is low risk to get sexually transmitted diseases?	1☐	2☐	3☐	4☐	5☐
6. When you want your partner to know you are committed to the relationship?	1☐	2☐	3☐	4☐	5☐

Please go on to the next page

Section 5 **Advantages and disadvantages of condom use -- Primary Partner**

Using the following scale of 1 = Not at all important to 5 = Extremely important, to indicate how important is each of the following reasons in your deciding to use condoms with your primary partner every time you have sex.

1=Not at all important 2=Somewhat important 3=Unsure 4=Very important 5=Extremely important

1. You would be safer from disease	1☐	2☐	3☐	4☐	5☐
2. You would feel more responsible	1☐	2☐	3☐	4☐	5☐
3. It protects your partner as well as yourself	1☐	2☐	3☐	4☐	5☐
4. Your partner would be safer from pregnancy	1☐	2☐	3☐	4☐	5☐
5. Condoms are easy to obtain.	1☐	2☐	3☐	4☐	5☐
6. It makes sex feel unnatural	1☐	2☐	3☐	4☐	5☐
7. It would be too much trouble	1☐	2☐	3☐	4☐	5☐
8. Your partner would be angry	1☐	2☐	3☐	4☐	5☐
9. Your partner would think you did not trust him or her.	1☐	2☐	3☐	4☐	5☐
10. You would have to rely on your partner's cooperation	1☐	2☐	3☐	4☐	5☐

Section 6 Condom Use with Other Partner / Casual Partner

This section deals with questions regarding having **vaginal sex with someone who is not your primary partner.** After you answer the items, skip or answer as directed.
If you do not participate in vaginal sex, please skip to section 7.

1. In the last 6 months, have you had vaginal sex with someone other than your primary partner? ☐

_____ 1) Yes How many partners do you have?

_____ 2) No

2. When you have vaginal sex with someone other than your primary partner, how often do you use a condom?

_____ 1) Every time (Skip to Question 3)

_____ 2) Almost every time (Skip to Question 4, do not answer question 3)

_____ 3) Sometimes (Skip to Question 4, do not answer question 3)

_____ 4) Almost never (Skip to Question 4, do not answer question 3)

_____ 5) Never (Skip to Question 4, do not answer question 3)

3. How long have you been using a condom **every time** you have vaginal sex with someone other than your primary partner?

_____ 1) 30 days or less (skip to section 7, do not answer question 4, 5)

_____ 2) More than 30 days – less than 6 months (skip to section 7, do not answer question 4, 5)

_____ 3) Six months or more (skip to section 7, do not answer question 4, 5)

4. Do you intend to start using condoms **every time** you have vaginal sex with someone other than your primary partner in **the NEXT 6 MONTHS**?

_____ 1) No (skip to section 7, do not answer question 5)

_____ 2) Yes

5. Do you intend to start using condoms **every time** you have vaginal sex with someone other than your primary partner in **the NEXT 30 DAYs**?

_____ 1) No

_____ 2) Yes

Section 7 Condom Use with Other Partner / Casual Partner (Anal Sex)

This section deals with questions regarding having **anal sex with someone who is not your primary partner**. After you answer the items, skip or answer as directed.
If you do not participate in anal sex, please skip to section 8

1. When you have anal sex with someone other than your primary partner, how often do you use a condom?

_____ 1) Every time (Skip to Question 2 below)
_____ 2) Almost every time (Skip to Question 3, do not answer question 2)
_____ 3) Sometimes (Skip to Question 3, do not answer question 2)
_____ 4) Almost never (Skip to Question 3, do not answer question 2)
_____ 5) Never (Skip to Question 3, do not answer question 2)

2. How long have you been using a condom **every time** you have anal sex with someone other than your primary partner?

_____ 1) 30 days or less (skip to section 8, do not answer question 3, 4)
_____ 2) More than 30 days – less than 6 months (skip to section 8, do not answer question 3, 4)
_____ 3) Six months or more (skip to section 8, do not answer question 3, 4)

3. Do you intend to start using condoms **every time** you have anal sex with someone other than your primary partner in **the NEXT 6 MONTHS**?

_____ 1) No (skip to section 8, do not answer question 4)
_____ 2) Yes

4. Do you intend to start using condoms **every time** you have anal sex with someone other than your primary partner in **the NEXT 30 DAYs**?

_____ 1) No
_____ 2) Yes

Section 8 Confidence – Other Partner (Casual Partner)

Complete this section only if you have causal partners. Using the following scale of 1 = Not at all confident to 5 = Extremely confident, how confident (sure) are you when you use a condom with your causal partners every time you have sex in the following situations.

1=Not at all confident 2=Not confident 3=Unsure 4=Confident 5=Extremely confident

1. When you have been using alcohol?	1☐	2☐	3☐	4☐	5☐
2. When you have been using drugs?	1☐	2☐	3☐	4☐	5☐
3. When you are sexually aroused?	1☐	2☐	3☐	4☐	5☐
4. When you think your partner might get mad?	1☐	2☐	3☐	4☐	5☐
5. When you think your partner is low risk to get sexually transmitted diseases?	1☐	2☐	3☐	4☐	5☐
6. When you want your partner to know you are committed to the relationship?	1☐	2☐	3☐	4☐	5☐

Please go on to the next page

Section 9 **Advantages and disadvantages of condom use -- Other Partners (Casual Partner)**

Using the following scale of 1 = Not at all important to 5 = Extremely important, to indicate how important is each of the following reasons in your deciding to use condoms with your casual partners every time you have sex.

1=Not at all important 2=Somewhat important 3=Unsure 4=Very important 5=Extremely important

1. You would be safer from disease	1☐	2☐	3☐	4☐	5☐
2. You would feel more responsible	1☐	2☐	3☐	4☐	5☐
3. It protects your partner as well as yourself	1☐	2☐	3☐	4☐	5☐
4. Your partner would be safer from pregnancy	1☐	2☐	3☐	4☐	5☐
5. Condoms are easy to obtain.	1☐	2☐	3☐	4☐	5☐
6. It makes sex feel unnatural	1☐	2☐	3☐	4☐	5☐
7. It would be too much trouble	1☐	2☐	3☐	4☐	5☐
8. Your partner would be angry	1☐	2☐	3☐	4☐	5☐
9. Your partner would think you did not trust him or her.	1☐	2☐	3☐	4☐	5☐
10. You would have to rely on your partner's cooperation	1☐	2☐	3☐	4☐	5☐

Section 10 **Sociodemographic Data**

The following questions are to obtain additional information about yourself. For each question, please write your answers or indicate which choice best describes your situation. Please answer every question.

1. What is your age? ☐
2. What is your marital status?
   ( ) Single – never married
   ( ) Married
   ( ) Divorced
   ( ) Separated
   ( ) Widowed
3. What is your level of education?
   ( ) None
   ( ) Elementary school
   ( ) Middle school
   ( ) High school
   ( ) College
   ( ) Bachelor degree
   ( ) Master's degree
   ( ) Earned doctorate
4. What is your average income per month?
   ( ) less than 3,000 Baht
   ( ) 3,001-5,000 Baht
   ( ) 5,001-7,000 Baht
   ( ) 7,001-9,000 Baht
   ( ) 9,001-11,000 Baht
   ( ) 11,01-13,000 Baht
   ( ) more than 13,000 Baht

APPENDIX B

THE MINI-MENTAL STATE QUESTIONNAIRE

The Mini-mental State Questionnaire

1. What is the name of this place? _____
2. In what city is it located? _____
3. What is today's date? _____
4. What is the month now? _____
5. What is the year? _____
6. How old are you? _____
7. What month _____ 8. and what year_____ were you born?
9. Who is the Prime Minister of Thailand? _____
10. Who was the Prime Minister before him? _____

APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

The Institutional Review Board for Human Use (IRB) has an approved Multiple Project Assurance with the Department of Health and Human Services and is in compliance with 21 CFR Parts 50 and 56 and ICH GCP Guidelines. The Assurance became effective on January 1, 1999 and the approval period is for five years. The Assurance number is M-1149, identification number 02.

Principal Investigator:	MASINGBOON, KHEMARADEE
Co-Investigator(s):	
Protocol Number:	**F000627002**
Protocol Title:	*The Transtheoretical Model of Change and Condom Use Among HIV-Positive People in the Eastern Region of Thailand*

The IRB reviewed and approved the above named project on 3/6/02. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to Annual continuing review as provided in that Assurance.

This project received FULL COMMITTEE review

IRB Approval Date: 3/6/02

Date IRB Approval Issued: 3/7/02

Ferdinand Urthaler, M.D.
Chairman of the Institutional Review Board
for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

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GRADUATE SCHOOL
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DISSERTATION APPROVAL FORM
DOCTOR OF SCIENCE IN NURSING

Name of Candidate Khemaradee Masingboon

Graduate Program Nursing

Title of Dissertation Condom Use Among HIV-Positive Thai Men

I certify that I have read this document and examined the student regarding its content. In my opinion, this dissertation conforms to acceptable standards of scholarly presentation and is adequate in scope and quality, and the attainments of this student are such that she may be recommended for the degree of Doctor of Science in Nursing.

Dissertation Committee:

Name	Signature
Joan G. Turner, **Chair**	
Barbara A. Smith	
Diane Grimley	
Katharine Stewart	
Martha H. Rice	

Director of Graduate Program

Dean, UAB Graduate School

Date 8/24/01