

EFFECTIVENESS OF A MODEL OF RISKY SEXUAL BEHAVIOR PREVENTION AMONG ADOLESCENT BOYS IN THAILAND

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Abstract. The objectives of this study were to identify predictable factors affecting risky sexual behavior and to evaluate the effectiveness of a risky sexual behavior prevention program among boys one and two months after the program. The Information-Motivation-Behavioral skills (IMB) model program was carried out among 74 adolescent boys aged 10-13 years and 74 of their parents in Phitsanulok Province, Thailand. Repeated analysis was employed to analyze the program's effectiveness. After the program, mean scores for comfort in talking about sex, self-efficacy, and skills in condom use increased significantly ($p < 0.05$), and mean scores regarding knowledge about sexually transmitted infections and skills in decision making decreased significantly ($p < 0.05$) compared to baseline. Boys participating in this program improved their condom use skills and comfort talking about sex at two months follow-up ($t = 3.82, p < 0.001$; $t = 3.10, p = 0.003$, respectively). These results provided evidence for applicability of a prevailing theory-based intervention within the local cultural context.

Keywords: adolescent boys, risk factors, sexual behavior, prevention program, research and development, IMB model

INTRODUCTION

Early sexual practice among adolescents is associated with negative health consequences, such as contraceptive non-use and teenage pregnancy. Timing of first sexual practice may be a useful marker for risky sexual behavior and a history of sexually transmitted infections (STIs)

(Dehene and Riedner, 2005). In Thailand, the age of first sexual intercourse has decreased over time (17.6 years old in 1996 to < 14 years old in 2006) (Information and Public Relations Office, 2006).

Because of a supportive political environment for strong action, Thailand made extraordinary progress in reversing the spread of HIV/AIDS. Incidence rates of new cases of STIs have decreased (from 37.87 per 100,000 in 1997 to 15.60 per 100,000 in 2006) (Bureau of AIDS, TB and STIs, 2006). However, rates of STIs among students has increased (from 2.09 per 100,000 in 1997 to 13.08 per 100,000 in 2006). The incident rates of STIs among

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boys have been 2-3 times higher than in girls (Bureau of AIDS, TB and STIs, 2009).

A literature review of AIDS and risky sexual behavior preventive programs among junior high school students during the past 10 years has been limited to life-skill techniques (Wibulpolprasert *et al*, 2005) and a health education program (Bureau of Reproductive Health, 2007). In 1999, the Ministry of Public Health strengthened life-skill programs to prevent HIV/AIDS in educational institutions and community programs for reducing HIV-associated risk factors using the media and development of innovative knowledge and research projects (Wibulpolprasert *et al*, 2005); however, the rates of STIs and abortions among adolescents is still increasing rapidly (Bureau of AIDS, TB and STIs, 2009).

Sex education in schools emphasizes basic knowledge, such as biology, personal development, hygiene, and family life. The teaching methods used are often not suitable for sensitive subjects such as sexual and reproductive health (WHO, 1999). Families and communities have an important effect on adolescent behavior problems (Kowaleski-Jones, 2000; Perrino *et al*, 2000). Some studies have concentrated on one aspect, such as adolescent groups (Chaipanit and Antiwarothai, 2008), families (Aalsma *et al*, 2006), or peers (Tisak and Thato, 2005). Caution is needed when interpreting the results of such studies since they reflect the researcher's views. Studies including families/parents, schools and communities for creating a supportive atmosphere to modify sexual behavior among adolescents are limited.

To address this problem, sex education programs should be developed based on the results of research that investigates

the needs, and involves the input of adolescents themselves and stakeholders, so the program fits within the social and cultural context of the subjects (Sirirasami, 2003) starting at an early age (< 15 years old) (Kirby *et al*, 1997). It is important to enhance adolescent's skills using family involvement to create a supportive environment to modify sexual behavior. The Information-Motivation-Behavioral skills (IMB) model and family involvement are complementary in theoretically guiding the design and implementation of the program (Fisher *et al*, 1999). The risky sexual behavior (RSB) prevention program was one part of the research and development process used to develop the RSB prevention model. The program was developed using quantitative and qualitative methods (*eg*, survey, interview). This study was an evaluation of the RSB prevention program among adolescent boys.

MATERIALS AND METHODS

Study sample and procedure

For the present study, a suburban community residing in Phitsanulok Province was selected by purposive sampling. The study period was from May to December 2009. One hundred twelve adolescent boys and 10 parents were enrolled in quantitative and qualitative data collection, respectively, to identify predictive factors associated with risky sexual behavior as part of a situation analysis phase. Research and development processes provided steps to develop the prevention program. This developed model was carried out among 74 adolescent boys who completed the program along with 74 of their parents. Measures were collected at baseline (T1), after the intervention (T2) and at one and two months (T3, T4) after the program. The study achieved a 95%

retention rate. Subjects were eligible if they were male, aged 10-13 years and their parents were willing to participate. The research protocol was approved by the Mahidol University Institutional Review Board (MU-IRB 2008/330.2403).

Data collection

First, formative research was carried out using a quantitative survey, in-depth interviews and focus group discussions with 112 boys and 10 parents. After deriving predictors from phase I situation analysis, research and development processes were used to develop an educational program using a group meeting and brainstorming technique among boys, parents, and stakeholders (*ie*, health teachers, health care providers, health care volunteers, and community leaders). The four stages of model development were: 1) developing participant readiness; 2) organizing the prevention program; 3) re-planning the prevention program; and 4) forming a network for the prevention program. The boys' education program was composed of five 1-hour interactive group sessions carried out weekly. Each session consisted of 16-20 boys and involved 1) providing STIs knowledge through lectures, discussions, and a card game; 2) discussion of self-efficacy in delaying initiation of sexual intercourse and skills in condom use involving demonstration and practice; 3) improving skills in decision making, 4) improving refusal skills, and 5) improving sexual communication with parents through lectures, discussions, and practice. Two additional were added based on the boys' needs, 6) discussion STIs and birth control methods; and 7) practicing mixed skills from the previous sessions by role-playing. Parents who participated in this study were involved in two 3-hour interactive group

sessions during 2 consecutive weeks: 1) discussion of parent monitoring, STIs prevention and birth control through lectures and demonstrations; 2) practice in communication with sons about sex. The processes in model development and the prevention program are reported elsewhere (Tipwareerom, 2010). Pre- and post-program questionnaires were filled out by the 74 boys and their parents at baseline, just after the program and at one and two months after the program. The boys and parents were compensated 60 Baht (THB 33 = USD1) for their participation.

Measurement

The instrument was guided by the IMB model and by previous studies of sexual behavior among adolescents. Demographic data (*ie*, age, income, alcohol consumption, supportive person and sources of STIs knowledge) were collected from the boys and their parents.

STIs knowledge. Evaluation of STIs knowledge consisted of 20 multiple choice questions about STIs knowledge (*eg*, symptoms, transmission route and prevention).

Attitude toward condom use. Evaluation of attitude toward condom use included a ten item scale (*eg*, a thin condom is a sign of a poor quality condom, using condom reduces sexual pleasure). Boys chose from out of five possible responses from 1 (strongly disagree) to 5 (strongly agree).

Skills in condom use. Skill in condom use evaluation consisted of an eight item checklist regarding the steps for using a male condom (*eg*, did the participant open the package without tearing or stretching the condom?) and two-close-ended questions (*eg*, what type of lubricants would you definitely avoid using with condoms).

Skills in decision making. Evaluation of skills in decision making included a ten

item scale related to a risky situation in which a friend invites the boy to watch a pornographic movie at home (*eg*, I decide to go with him because I do not want my friends to criticize me). Boys chose from out of three possible responses from 1 (agree) to 3 (disagree).

Self-awareness. Evaluation of perceived self-awareness regarding sexual behavior included a twelve item scale (*eg*, you can make your partner pregnant when you have a "wet dream", masturbation can release sexual tension). Each item was answered on a scale of 1 (disagree) to 3 (agree).

Self-efficacy. Self efficacy evaluation consisted of self-efficacy in delaying initiation of sexual intercourse, self-efficacy in refusal skills (Kasen *et al*, 1993), and self-efficacy in condom use skill (Cecil and Pinkerton, 1998) including a fifteen item scale which consisted of a five item scale regarding delaying initiation of sexual intercourse (*eg*, postpone sex until marriage), a five item scale regarding refusal skills (*eg*, you would be able to say no to someone you had dated for a long time), and a five item scale regarding skills in condom use (*eg*, using a condom is a sign of not trusting your partner). Each item was answered with a five rating scale from 1 (not at all) to 5 (very sure).

Refusal skills. Refusal skills were evaluated with ten multiple choice questions about refusal skills in risky situations (*eg*, friend's invitation to watch pornographic movies, friend's invitation to drink alcohol).

Family relationships. Family relationships were evaluated by evaluating family communication in regard to teen sexual behavior (Aspy *et al*, 2007). Boys answered six questions [*eg*, do(es) your parent(s) try to understand your point of view?] who

chose from either "yes" or "no".

Parent monitoring. This was evaluated by the boys completing an eight item parental monitoring scale which was applied from the parental monitoring scale (Small and Kerns, 1993) [*eg*, my parent(s) know where I am after school]. Boys chose from one of three possible responses from 1 (never) to 3 (always).

Sexual communication with parents. This measurement was evaluated in three parts: discussion of sexual topics (Zimet *et al*, 1988), methods for talking about sex (Powwattana, 2002), and comfort talking with parents (Lerand *et al*, 2007). Sexual topics included seven items (*eg*, wet dreams, condom use) with four possible answers ranging from 1 (never) to 4 (very often). Talking methods included three-item checklists (*ie*, discuss the topic directly, using examples from television or friends) and open answers. Comfort regarding talking about sex included a seven-item list of question with a 4-point Likert-type continuum, with responses ranging from 1 (very uncomfortable) to 4 (very comfortable).

Sexual activities. Sexual activities were evaluated using closed-end questions about 17 activities possibly leading to sexual intercourse. These questions were used by young adult Thai women and were translated into Thai by Powwattana (2002). Each activity was weighted according to its degree of risk for transmission of STIs (*eg*, going steady, open mouth kissing, having vaginal or anal sex with a condom). The possible scores ranged from 0 (going steady) to 8 (having vaginal or anal sex without a condom). The Cronbach's alpha of these measures applied to the current study was higher than 0.7.

Data analysis

For formative research, content analysis was applied to qualitative data.

Table 1
Factors predicting risky sexual behavior among adolescent boys by multiple regression ($n=112$).

Predictors	R ²	R ² change	β	t	p -value ^a
Friend invited to drink alcohol	0.22	0.22	1.33	5.08	<0.001
Friend invited to use drugs	0.27	0.06	-2.62	-3.55	0.001
Alcohol consumption	0.37	0.09	0.37	3.95	<0.001
Friend invited to read porno magazines	0.39	0.03	-1.08	-2.92	0.004
Friend invited to watch porno movies	0.42	0.03	1.15	2.49	0.014
Comfortable to talk about sex with family	0.45	0.02	0.02	2.04	0.044

Overall F (6, 105) = 14.06, $p<0.05$; ^a $p<0.05$

Table 2
Parental behavior score using paired t -test ($n=74$).

Behaviors	Baseline Mean (SD)	After intervention Mean (SD)	t	p -value
Talking about general topics	3.26 (0.94)	3.26 (0.85)	0.00	1.000
Family relationships	5.43 (1.52)	5.50 (1.67)	-0.36	0.720
Parental monitoring	19.05 (2.54)	18.97 (2.98)	0.24	0.808
Sexual communication	9.09 (3.48)	9.23 (3.62)	-0.29	0.774
Comfortable talking about sex	17.31 (4.97)	18.53 (4.85)	-1.70	0.094

* 2- tailed test

A paired t -test was used to evaluate changes among parents and repeated measures ANOVA was used to detect the outcome of the prevention program in boys at baseline and just after the program and at one and two months after the program.

RESULTS

In the present study, the mean (\pm SD) age of the boys was 11.4 years (\pm 1.1). The majority (55.4%) lived with their parents; 62.5% of their parents lived together. More than two-thirds of respondents (77.7%) talked with their family about education and friends. On average, the money received from their families was 22 Baht/

day, 71.4% had enough money and had savings. More than half of respondents (69.9%) watched television during their leisure time.

The variables significantly predicting risky sexual behavior among adolescent boys were an invitation from a friend to drink alcohol, to use drugs, to read pornographic magazines, to watch pornographic movies, to consume alcohol and comfort in talking to parents about sex (Table 1).

Table 2 shows the findings of the evaluation of the prevention model among parents. None of the parents' behavior scores changed significantly with intervention ($p>0.05$).

Table 3
Repeated measured of ANOVA results of adolescent boy behaviors based on the IMB model at baseline, and three evaluation times ($n= 74$).

Factors	Baseline	Just after	One month after	Two months after	Group x Time	
	(T1)	(T2)	(T3)	(T4)	$F(3, 219)$	p
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Information						
STIs knowledge	9.58 (3.20)	11.09 (3.53)	10.05 (4.01)	8.32 (4.05)	13.16	<0.001 ^a
Alcohol consumption	1.16 (0.57)	1.23 (0.59)	1.19 (0.52)	1.11 (0.42)	0.96	0.410
Motivation						
Peer pressure	0.65 (1.47)	1.10 (1.79)	0.65 (1.47)	0.64 (1.45)	1.83	0.143
Family relationships	9.32 (1.99)	9.82 (2.67)	9.42 (2.37)	9.26 (2.54)	1.63	0.182
Parental monitoring	18.80 (3.39)	17.96 (3.81)	18.93 (4.29)	19.41 (3.97)	2.78	0.042 ^b
Sexual communication	8.28 (3.18)	8.74 (3.08)	8.47 (3.19)	7.95 (2.94)	1.48	0.222
Comfortable to talk about sex	14.16 (5.65)	15.09 (4.55)	15.84 (5.74)	16.54 (5.64)	4.25	0.006 ^b
Behavioral skills						
Self-efficacy: delayed initiation of sex	14.64 (5.94)	17.26 (5.92)	15.68 (6.47)	15.12 (6.95)	4.03	0.008 ^b
Self-efficacy: refusal skills	15.85 (6.88)	17.89 (5.38)	15.34 (6.75)	16.22 (7.21)	3.31	0.021 ^b
Self-efficacy: skills in condom used	14.42 (5.95)	17.53 (6.37)	16.55 (6.99)	15.62 (6.97)	4.65	0.004 ^b
Skills in decision making	24.85 (4.42)	24.03 (4.35)	24.20 (4.70)	23.26 (4.45)	3.64	0.014 ^b
Refusal skills	3.34 (1.75)	3.22 (1.62)	3.24 (1.72)	3.15 (1.73)	0.20	0.899
Delay initiation of sex	0.12 (0.33)	0.12 (0.33)	0.15 (0.36)	0.09 (0.30)	0.11	0.650
Skills in condom use	4.46 (3.42)	5.95 (3.87)	6.43 (3.60)	6.51 (3.57)	7.29	<0.001 ^a

^a $p<0.001$, ^b $p<0.05$

Table 3 shows the mean scores, standard deviation, and a summary of repeated measures of one way ANOVA among the boys' behaviors based on the IMB model at baseline (T1), just after intervention (T2), one (T3) and two months (T4) after the program. A repeated measure of one way ANOVA was computed. Parental monitoring, comfortable talking about sex, self-efficacy in delayed initiation of sex, self-efficacy in refusal skills, self-efficacy in skills of condom use and skills in condom use were improved significantly ($p<0.05$) while STIs knowledge

and decision making skills decreased significantly ($p<0.05$).

Comparison of boys' behaviors at baseline and at the three evaluation times showed the boys' knowledge regarding STIs was significantly different between T1 and T2 ($p = 0.003$), between T2 and T4 ($p<0.001$), and between T3 and T4 ($p = 0.001$). The comfort to talk about sex, self-efficacy in delaying initiation of sex, and skills in decision making were significantly different between T1 and T4 ($p = 0.016$, 0.033 , and 0.015 , respectively). Self-efficacy in delaying initiation of sex

was also significantly different between T2 and T4 ($p = 0.022$). Self-efficacy in condom use skills was significantly different between T1 and T2 ($p = 0.004$). Only skills in condom used differed significantly at each point in time (T2, T3, and T4) compared to T1 ($p = 0.048$, <0.001 , and 0.002 , respectively).

DISCUSSION

The findings of this study identified important variables predicting risky sexual behavior among Thai boys living in Phitsanulok Province, Thailand. These findings are similar to several studies: *ie*, peers (Aalsma *et al*, 2006), alcohol consumption (Guiao *et al*, 2004), and sexual communication with parents (Powwattana, 2008, 2009) influenced boys' behaviors.

Adolescents are in a period of learning and mastering basic social skills (Dacey and Travers, 2004). They learn to get along with friends and enemies. Peers have an influence on adolescent behavior, such as drinking alcohol, using drugs (Guiao *et al*, 2004), and watching pornographic movies.

The study results indicate alcohol consumption can lead boys to engage in risky behaviors *eg*, using drugs, reading pornographic magazines, and watching pornographic movies. The boys felt they could do anything after drinking alcohol; they felt brave and comfortable. The main reason for drinking was an invitation from family members (*eg*, father, uncle) or friends. Some boys decided to drink out of curiosity.

There was a strong relationship between sexual communication and sexual behavior (DiLorio *et al*, 2007; Powwattana, 2008, 2009). The findings indicate the most popular and comfortable topics discussed with parents were growth and develop-

ment. Early adolescents are in a stage of changing secondary sexual characteristics from boys to teenagers such as pubic hair growth, voice changes, facial hair growth, and the beginning of acne (Huebner, 2000). The qualitative data support that many boys were comfortable in discussing these topics with their fathers or uncles. In contrast, boys did not want to discuss sensitive issues, such as girlfriends, dating, STIs, and condom use, with parents because they felt shy, and feared parental criticism. Parents did not want to discuss sexual topics because they thought their boys were too young. They wanted to teach their boys about drugs, tobacco, and alcohol drinking. Sexual communication and comfort in discussing sex depended on methods of communication *ie*, using examples made boys feel more comfortable with discussing sexual topics, *eg*, STIs, condom use, STIs prevention and wet dreams, with parents (Powwattana, 2009). These results are congruent with adolescents who reported positive communication with their parents were more likely to delay initiation of sexual intercourse compared to boys who reported poor communication with their parents (Karofsky *et al*, 2000).

Regarding the effects of the risky sexual behavior prevention program, the results indicate parents/guardians who completed the prevention program did not improve their behavior scores. The possible reasons for this might be the time limitation (6 topics in 3 hours) and activities in the program (*ie*, lecturing, demonstrating, questioning and answering) were not proper for parents. Even though the mean score regarding sexual communication and comfort in talking about sex with sons improved, they were not significantly different when compared with baseline. This may be due to cultural

sensitivity; most parents wanted to delay sexual discussions with their children until they thought them old enough to learn and they usually focused on intention to study and being a good child (Tipwaraerom, 2010).

The findings indicate adolescent boys who completed the interventions based on the IMB model had improvement in condom use skills, self-efficacy (*ie*, delaying sex, refusal skills, and skills in condom use) and comfort in discussing sex with their parents. Correct condom use is a main sexual topic boys want to learn about when they become teenagers because they are curious about intimate relationships (Huebner, 2000). In our program, most of the boys paid attention to learning about condom use because they added this topic to the program and wanted to practice skills of condom use at least 2 more times. Accordingly, condom use skill improved.

Self-efficacy, involved the ability to delay sexual intercourse, to refuse to engage in risky behavior, and to use condoms correctly. The efficacy of the prevention program (*eg*, discussion in a real situation and role-playing about the negative effects of early sexual intercourse) raised their awareness and confidence in preventing risky behavior (Aarons *et al*, 2000).

The program provided an opportunity for practicing sexual communication. However, communication with parents about sex did not improve. Boys felt more comfortable discussing sexual topics with their parents. They created risky situations which happened in their daily life, practiced sexual communication and created role-playing. These activities made boys feel familiar and comfortable with discussing sex. The data confirm most boys wanted their parents to talk

indirectly about sex (*eg*, using examples from television or from friends) because they felt shy and feared criticism by their parents. These results show increasing sexual communication skills is an important prevention strategy for Thai boys (Aspy *et al*, 2007).

Knowledge of STIs and skills in decision making among boys decreased after completing the program. The boys could not remember some of the sexually transmitted diseases (*eg*, gonorrhea and syphilis). They remembered HIV infection and AIDS better than the other diseases because of the media (*ie*, television, radio). The Information Processing Theory could possibly explain this result (Miller, 1956). The human mind is like a computer because it can process information through the application of logical rules and strategies and has a limited capacity for the amount and nature of the information.

Adolescent decision making concerning engagement in early sexual activity is vital for intervention efforts to reduce the negative outcomes of adolescent sexual behavior (Powwattana, 2008). Boys did not increase their skills in decision making after completing the program because of two possible reasons. First, activities in the program (*ie*, lecturing and practicing) were not relevant to the boy's perceived problems or needs because we prepared risky situation exercises based on the researcher's point of view. These situations did not fulfill the boys' needs. Another reason may be due to they did not practice those skills in decision making after completing the prevention program.

Research has confirmed the positive influence that parental communication has on delaying their children's sexual debut (Aspy *et al*, 2007). Intervention by parents should offer support initiating an

open discussion with their sons about explicit sexual behavior. These discussions may prevent high-risk behavior the boys are exposed to through media and peers which are representative of social norms.

The findings confirm sex education programs should start at an early age (Kirby *et al*, 1997). The number of boys who reported having sexual experiences (eg, dating, holding hands, closed mouth kissing) did not increase significantly over the two months of observation; thereby, suggesting that the intervention program had a positive impact on delay of sexual initiation.

A potentially important implication of the findings is that the prevention program based on the IMB model may prevent risky sexual behavior among Thai adolescents in school. Evidence suggests sexual communication, self-efficacy, and skills in condom use may reduce STIs in adolescents (Miller, 1956; Aarons *et al*, 2000; Huebner, 2000; Huebner and Howell, 2003; Aspy *et al*, 2007; Powwattana, 2008; Siriarunrat *et al*, 2010). Another important implication of the findings is that parental participation is important for the prevention program. The qualitative data shows the importance of identifying the causes of risky sexual behavior among adolescent boys.

This study suggests risky sexual intervention programs among adolescents should involve parent/guardian participation and should be based on the participant's needs and concerns. The risky sexual behavior prevention program for adolescents can be efficacious. It may be more difficult to change behavior among sexually active adolescents, which need more intensive intervention, than non-sexually active adolescents.

There were some limitations of this

study. The participants were a purposive sampling and were based on self-reported measures, therefore generalization is limited and misclassification bias is a concern.

In summary, this study shows the IMB model can identify risky sexual behavior among adolescents. However the model is unable to indicate a difference from other adolescents in a different context. Future testing of the model with larger samples taken from contexts and over longer periods of follow-up will yield more precise and stable effect estimations. Future programs based on the IMB model should add interventions regarding peer pressure and media as motivating factors to lead adolescents to engage in risky behavior.

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