Development of a School-based Pregnancy Prevention Model for Early Adolescent Female Thais

Cholada Chaikoolvatana, Arpaporn Powwattana, Sunee Lagampan, Ann Jirapongsuwan, Trude Bennet

Abstract : This participative action research sought to develop, for early adolescent female Thais, a school-based pregnancy prevention model that included the perspectives of adolescents, family members, school system members, and community members (i.e., health personnel and community leaders) in a province in northern Thailand. A participative action research design was implemented, using quantitative and qualitative data gathering approaches, via a three-phase plan (i.e., situational analysis, model development, and model reflection). In the first phase, 154 female students in secondary-school grades seven and eight, and 115 mothers/female guardians were assessed, using Problem Behavior Theory as a guide, about factors that influence sexual risk behavior. Data were obtained via self-administered questionnaires. During the second phase of the study, 14 focus groups and 15 in-depth interviews were conducted, with 20 of the adolescent subjects, 13 of the adolescents' mothers/guardians, and 69 key stakeholders for the purposes of obtaining additional data and developing a provisional teenage-pregnancy prevention model. The third and final phase involved model reflection, with 34 participants, selected from the first two phases of the study (i.e., seven female adolescent subjects, six male adolescent peers, eight mothers/guardians, two teachers, two health personnel, and nine community leaders), to ensure the model was designed to address the pregnancy prevention needs of early adolescent female Thais. Qualitative data were assessed via content analysis, while descriptive statistics, Pearson's correlation coefficient and stepwise multiple regression were used to analyze the quantitative data.

The final version of the School-based Teenage Pregnancy Prevention Model was composed of four main parts (i.e., individual, family, school, and community) with nine essential components, including: promote family relationships; promote family communication; promote family roles; establish peer leaders; provide sex education; encourage moral principles; promote recreational interests; create school-family-community networks; and, provide sexual reproductive health services. Actions among and between the four main parts consisted of: sharing information; supporting and involving; sharing environment; supporting and promoting; and collaboration.

The key concepts of the model demonstrate the need for ownership and involvement of the family, school, individual, and community in dealing with development of programs that address teenage pregnancy. In addition, the findings provide an increased understanding of sexual risk behavior of early adolescent female Thais.

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Introduction

There is growing evidence of an increase in the number of pregnancies among Thai adolescents. Reports from Thailand's Ministry of Public Health, show the percentage of live births by mothers, 10 to 19 years of age, increased from 13.9 per 100 live births, in 2004, to 16.5 per 100 live births, in 2011.[1] In recent years, Thailand has shifted from an

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agricultural to an industrial economy, which has led to changes in living conditions and social norms. The sexual behavior of Thai adolescents also have changed and become an important public health issue.[2-4] Prior to these changes, pre-marital sex was an unacceptable practice within the Thai culture. However, within the past decade pre-marital sex has appeared to become increasingly acceptable.[5, 6] Moreover, male adolescents' sexual activities have shifted from sex workers (prostitutes) to girlfriends and/or lovers.[7-9] This shift in sexual activities has often resulted in the practice of unsafe sex among adolescents. Thus, there has been an increase in sexual risk behavior, including first sexual intercourse at a younger age and unprotected sexual behavior, which has resulted in an increased occurrence of sexually transmitted diseases (STDs), human immunodeficiency virus (HIV), unwanted pregnancies, and induced abortions.[10, 11]

Phayao, the study site, is a medium sized province in northern Thailand, where the prevalence of HIV/AIDS is considered a serious health problem, even though the province is not a highly populated area or frequently visited by tourists. The prevalence rate of HIV, between 2009 and 2011, in Phayao, was higher than in the provinces of Chiang Mai and Chiang Rai.[12] In 2012, the Phayao Provincial Public Health Office reported the average age of first sexual intercourse, among female students, was 11 to 13 years. In addition, the percentage of pregnant women, under 20 years of age, rose from 10.9, in 2009, to15.6, in 2011.[13] These data support the fact that teenage pregnancy is a serious health problem within the area.

Review of the literature suggests there has been a decrease in the age of early adolescents' first engagement in sexual intercourse, as well as an increase in their pregnancy rates.[6, 8, 10, 11]In order to reduce teenage pregnancy, it is important to understand the factors that influence adolescent sexual behavior. Prior studies have revealed factors that tend to predispose adolescents to engage in sexual activities, including: age; academic achievement; economic status; lack of parental monitoring; peer pressure; and, entertainment areas around the adolescents' residence or school (i.e., pubs, bars, karaoke businesses).[2, 5, 14] A number of Thai adolescent pregnancy prevention programs have been designed, with several of them focusing on increasing adolescents' knowledge about sexual and reproductive health,[3,15] decision-making skills,[16] and problem-solving.[16,17] However, these programs have limitations, such as: a) being based only on the researchers' opinions[15-17] and b) having a lack of in-depth prevention program elements that address the perspectives of the adolescents,[15,16] parents,[3,17] schools,[15-17] and communities.[3,15-17] Although a number of the pregnancy prevention programs have targeted middle and late adolescents, they have failed to address early adolescents.[10, 14, 18] The lack of such programs has become a concern, given that the age of first-time sexual intercourse has decreased and early adolescent pregnancies have increased.[1, 10, 11]

Literature Review

Numerous factors have been associated with adolescent sexual behavior and are rooted in the teens themselves, as well as in their families, peers, and the communities in which they live.[14, 19] Previous studies have revealed factors associated with three main systems (individual, family, and social environment) that strongly influence adolescent sexual risk behavior.[2,5,14,20] Predictors of adolescents' sexual risk behavior, associated with the individual system, have been found to include: knowledge about sexual risk taking;[2, 5] negative health outcomes associated with HIV infection and pregnancy;[5, 14] attitudes toward premarital sex;[14, 20] and, negotiation skills.[2, 4] In addition, predictors of sexual behavior among adolescents, associated with their families, have been found to include: parent-adolescent communication;[14, 21]

parenting styles;[22, 23] and, family relationships.[14, 22] Likewise, the relationship between the adolescent and members within the family system have been found to be a predictor of adolescent pregnancy.[22] With respect to the social environment system, peer attitudes and behavior have been found to be related to adolescents' sexual risk behavior. For example, adolescents who have peers that are sexually active have been found to more likely be sexually active.[5, 14, 20] Thus, when attempting to identify adolescents at greatest risk, it is essential to understand the factors related to their sexual behavior.

Early adolescence is when changes in one's physical/sexual development and clarification of one's values/morals, including those related to sex and sexuality,[24] occur. Promoting healthy behavior among early adolescents can help to positively shape their transition from childhood to adulthood.[3, 18, 24] Programs, worldwide, have been developed for the purpose of lessening adolescents' sexual risk behavior. These programs have been implemented by schools, health care centers, and community organizations, and address sex education, access to contraceptive services, community and school-wide activities, and youth development.[10, 18, 25, 26] The school-based teenage prevention programs, in Thailand, that have implemented interventions that focus on sexuality and reproductive health, have been successful in increasing teenagers' knowledge about HIV/AIDS and enhancing their skills regarding sexual communication.[3, 10, 18] Unfortunately, many of these programs have used experimental or quasi-experiment designs that have not focused on the in-depth perspectives of the teenagers, their parents, schools, or communities, with respect to the teenagers' sexual behavior.[14, 15-17] As previously mentioned, pregnancy prevention programs have tended to target middle and late adolescents, without focusing on early female adolescents.[10, 18] Thus, in order to address the gaps in prior and existing programs, the purpose of this study was to develop a school-based pregnancy prevention model, for early female adolescent Thais, that included the perspectives of adolescents, family members, school system members, and community members (i.e., health personnel and community leaders) in one province in northern Thailand.

Conceptual Framework

Problem Behavior Theory (PBT)[27] served as the framework for this study in identifying factors, among early adolescent Thais, that contribute to their involvement in sexually risky behavior. The PBT states that problem behavior is the outcome of interactions between adolescents and their surrounding environments, while sexually risky behavior, among adolescents, is influenced by the adolescents, as well as by their social and/or environmental factors, (i.e., their parents, peers, and school). Moreover, sexually risky behavior does not occur in isolation. Involvement in risky behavior (i.e. smoking or alcohol abuse) has been found to increase the likelihood of one becoming involved in sexually risky behavior. The PBT is composed of four domains (demographic structure, personality, perceived environment, and socialization) and proposes that relationships exist among risk and protective factors, in the four domains, whereby adolescents' involvement in sexual behavior increases the risk of teenage pregnancy.[19, 27] Demographic structure has been defined as parental socio-economic information, including parental: education; occupation; and, socioeconomic status.[27, 28] In addition, personality has been recognized as including a patterned and interrelated set of cognitive variables, such as value of academic achievement, attitudinal tolerance of deviance, and religious expectations.[19, 28] Furthermore, perceived-environment has been viewed as including adolescents' perceptions of social controls, models, and support (i.e., peer modeling and parental disapproval of problem behavior).[29] Finally,

socialization has been identified as strong antecedent-background variables that influence problem behaviors among adolescents, such as parental monitoring and parent-adolescent relationships.[30] The PBT has been applied in the investigation of a variety of childhood, adolescent, and young adulthood behaviors, including: alcohol use,[19, 30] cigarette smoking,[19, 28] early sexual intercourse,[28, 29] drinking and driving,[19] and other risky driving behaviors (i.e., speeding and driving without a license).[19, 27]

Method

Design: The researchers used a participative action research (PAR) design that consisted of three phases: Phase I-situational analysis; Phase II- model development; and, Phase III-model reflection. Both quantitative and qualitative approaches were used to obtain data.

Ethical considerations: Approval to conduct the study was obtained from the Institutional Review Board of the primary investigator's (PI) academic institution, as well as from the administrators of the schools used as study sites. All participants (female adolescents, mothers/guardians of the female adolescents, and key stakeholders) were informed about: the nature of the study; voluntary participation; what study involvement entailed; confidentiality and anonymity issues; and, the right to withdraw, at any time, without repercussions. Those who agreed to participate were asked to sign a consent/assent form. The adult participants signed consent forms, while the adolescent participants signed assent forms, after their parents signed a consent form indicating they could participate in the study.

Setting and sample: The Phayao province was selected as the study site because of its high prevalence of sexually transmitted diseases and pregnant women less than 20 years of age.[13] Two of the 11 public secondary schools, located within the province, were selected as sites for data collection based upon the fact they were similar in type and size, and the schools' administrators were willing to have their students participate in the study. Both schools were co-educational.

For Phase I of the study, in order to achieve predictive model testing, a power analysis was performed to determine the sample size.[31] A power of 0.80, a significance level of 0.05, and a medium effect size were used, producing a sample size of 129. However, in order to obtain significant results and overcome the problem of missing data, the sample size was increased by 20%, resulting in a required sample size of 154. Selection criteria for the female adolescent subjects included: being enrolled in grade seven or eight in one of the two selected secondary schools; obtaining permission from their parents/guardians to participate; and, being willing to participate. Selection criteria for the mothers/guardians of the female adolescents included: being the mother/guardian of one of the female adolescent study participants; willing to participate; and, giving signed consent. The total of 161 female adolescents (56 from School A and 105 from School B) met the inclusion criteria, while a total of 136 mothers/guardians (50 from School A and 86 from School B) met the inclusion criteria. The reason the number of female adolescents and number of mothers/guardians did not match was because some of the mothers/guardians had two to three adolescent daughters, in the study, as well as a granddaughter for whom they were responsible. All of the participants assented/consented to take part in the study. However, some of them were absent the day data were collected. As a result, only 154 female adolescents (52 from School A and 102 from School B) and 115 mothers/guardians (45 from School A and 70 from School B) completed the study.

Of the 154 female adolescent subjects, 69 were in the 7th grade and 92 were in the 8th grade. They had a mean age of 13 years (range = 11 to 15 years), and,

primarily: had a GPA over 3.00 (n = 113; 74%); were Buddhist (n = 153; 99.3%); received an allowance of 21 to 30 baht per day [30 baht = 1 USD] (n = 78; 50.6%); received knowledge about sex from their teachers (n = 132; 85.7%), parents (n = 118; 76.6%), or media (n = 118; 76.6%); lived with their parents (n = 93; 60.4%); had family incomes less than 5,000 baht per month (n = 90; 58.3%); lived near a temple (n = 135; 87.7%); and, lived near an internet/game store or pub (n = 79; 51.3%). The 115 mothers/guardians were an average age of 40.84 years (range = 20 – 66 years) and consisted of: mothers (n = 89; 77.4%); aunts (n = 16; 13.9%); and, grandmothers (n = 10; 8.7%) of the adolescent participants. Most of them: were married (n = 98; 85.2.0%); lived with their spouses (n = 98; 85.2 %); finished primary school (n = 122; 79.2%); worked as an agriculturist (n = 96; 62.3%); and, had family incomes of less than 5,000 baht per month (n= 67; 58.3 %).

For Phase II of the study, the participants included 20 female adolescents, 13 respective mothers/guardians of the female adolescents, and 69 key stakeholders from the selected schools and the communities where the schools were located. The 69 key stakeholders included: 11 male and 23 female school peers (16 from School A and 18 from School B); 13 teachers of the adolescents (six from School A and seven from School B); one school administrator (School A); three public health nurses (two from Hospital A in the community where School A was located and one from Hospital B in the community where School B was located); two school janitors (one from each school); and, 15 community leaders (seven from Community A where School A was located and eight from Community B where School B was located), including four village headsmen, nine health volunteers, and, two members of the Tombon Administrative Organization.

Selection criteria for the peers of the female adolescents were being male or female students enrolled in grades seven or eight, at one of the two schools used as a study site. For the school administrator and teachers, the selection criteria included: working in the selected study site schools and having experience in teaching/working with issues related to adolescent school-based health. The selection criterion for the school janitors was that they worked in one of the two schools used as a study site. The janitors were identified as key stakeholders because they acted as school guards for the purpose of making sure students were not getting into trouble or breaking school rules. For the health personnel, the inclusion criteria included: being a public health nurse working in the hospital located in one of the two communities used as a study site and dealing with issues related to community-based adolescent health. Finally, for the community leaders, the selection criteria included: being staff members at the Tombon Administrative Organization and working with issues related to community-based adolescent health.

In Phase III the 34 participants included: seven female adolescent subjects; six male adolescent school peers; eight mothers/guardians; two teachers; two health personnel; and, nine community leaders. Inclusion criteria for Phase III participants included: being involved in Phase II of the study and being willing to participate in the last phase of the study.

Procedure and Data Collection: Phase I: Situational Analysis. The aim of Phase I was to explore the factors that influence adolescents' sexual risk behavior. A series of questionnaires, administered to the adolescents and their respective mothers/ guardians, were used to assess factors related to the adolescents' sexually risky behavior. Completion of the series of questionnaires, which took approximately 30 to 40 minutes, was carried out in a classroom at each of the respective schools. However, the adolescents and their respective mothers/guardians were administered the questionnaires, on different days and at different times, so as to prevent cross-contaminated responses.

The factors examined were based on the PBT and prior empirical data on sexual behavior of adolescents. Although the content of the questionnaires, except in the questionnaires used to collect demographic data, were the same, the manner in which items were worded slightly differed. The items in the questionnaires for the adolescents focused on the adolescents' personal perceptions regarding sexually risky behavior, while items in the questionnaire for the mother/guardians focused on the mothers/guardians' perceptions regarding sexual activities among early female adolescents and their parenting behaviors.

The seven questionnaires used to obtain data included the: researcher-developed Demographic Data Questionnaire for the Adolescents; researcher-developed Demographic Data Questionnaire for the Mothers/Guardians; researcher-developed Knowledge about Sexual Reproductive Health; Attitudes toward Sexual Activity Questionnaire;[20, 32] Value of Academic Achievement Questionnaire;[33] Parental Involvement Questionnaire;[34] Parental Monitoring Questionnaire;[23, 30] Parental Approval of Sexual Risk Behavior Questionnaire;[21, 33] Parent-Adolescent Relationships Questionnaire;[21] Parent-Adolescent Sexual Communication Questionnaire;[23] Peer Approval and Sexual Behavior Questionnaire;[30, 32] and, researcher-modified Sexual Risk Behavior Questionniare.[20, 35]

The researcher-developed Demographic Data Questionnaire for the Female Adolescents requested information regarding: age; educational level; grade point average, religion; allowance; sources of sexual knowledge; living arrangements; family income; whether her home was near a temple; and, whether her home was near an internet/game shop/pub. The researcher-developed Demographic Data Questionnaire for Mothers/Guardians requested information about: age; education; marital status; type of guardian (i.e., mother, aunt, grandmother); family income; occupation; and, living arrangements.

The 15-item, researcher-developed Knowledge about Sexual Reproductive Health Questionnaire (KSRHQ) was based on the Ministry of Public Health Guidelines for Sex Education.[36] The questionnaire measured the respondents' knowledge about human and sexual development (four items: i.e., "What is an indicator of female sexual maturity?"); psychological development (two items: i.e., "What is the right way to manage sexual desire among adolescents?"); sociological development (three items: i.e., "What is the appropriate relationships between males and females in Thai culture?"); sexual risk behavior (three items: i.e., "What are the negative consequences of having sexual intercourse during adolescence?"); life skills sex education (two items: i.e., "What is the meaning of sex education?"); and, HIV prevention (one item: i.e., "What kind of contraception can prevent STDs and pregnancy?"). Examples of possible responses to items were: changes in the breasts and menstruation (for the question: "What is an indicator of female sexual maturity?") and contraceptive pills and condoms (for the question: "What kind of contraception can prevent STDs and pregnancy?"). Each correct answer was given a value of 1, while each incorrect response received a value of 0. A total score, which could range from 0 to 15, was obtained by summing all of the correct responses.

The 12-item Attitudes toward Sexual Activity Questionnaire (ASAQ)[20, 32] was used to measure the adolescents' beliefs or opinions about sexual activities. Examples of the items were: "Having sexual intercourse is the way to keep a lover"; and, "Having a kiss and hug with a boyfriend is normal." The questionnaire included four positive and eight negative statements. Possible responses to each item ranged from 1 = "strongly agree" to 4 = "strongly disagree." The total score, which ranged from 12 to 48, was obtained by summing the response values across all items, with higher scores indicating a disapproving attitude toward sexual activity.

The 9-item Value of Academic Achievement Questionnaire (VAAQ) [33] was used to measure the adolescents' values toward school achievement and future planning. Examples of the items were: "Having a good grade" (school achievement); and, "Having a good job that pays well" (future planning). Possible responses to the items ranged from 1 = "low value" to 3 = "high value." The total score, which could range from 9 to 27, was obtained by summing the response values across all items, with higher scores indicating high values on academic achievement and future planning.

Perceptions related to parental support and control, regarding conventional and problem behaviors among the adolescents, was measured by way of the 10-item Parental Involvement Questionnaire (PIQ).[34] Examples of items were: "Your parents encourage you to go to temple or religious services" (parental support) and "You have to follow strict rules about going out with friends or going out at night" (parental control). Possible responses to the items ranged from 1 = "never" to 4 = "always." The total score, which could range from 10 to 40, was obtained by summing all response values across all items, with higher scores indicating perceived high parental involvement.

The 8-item Parental Monitoring Questionnaire (PMQ) [23, 30] was used to measure the adolescents' perceptions of whether their mothers/guardians usually knew where they were, what they were doing, and whom they were with. Examples of items were: "I tell my parent(s) whom I am going to be with before I go out" and "My parent(s) know where I go in my free time." Possible responses to all items ranged from 1 = "never" to 4 = "always." The total score, which could range from 8 to 32, was obtained by summing the response values across all items, with higher scores indicating high parental monitoring.

The adolescents' perceptions related to parental approval or disapproval of engagement in sexually risky behavior was assessed by way of the 5-item Parental Approval Sexual Risk Behavior Questionnaire (PASRBQ).[21, 33] Examples of items were: "My mother thinks it is fine for me to go to an entertainment place" and "My mother would approve of me having a boyfriend while at school." Possible responses to the items ranged from 1 = "strongly agree" to 4 = "strongly disagree." The total score, which could range from 5 to 20, was obtained by summing the response values across all items, with higher scores indicating perceived parental disapproval of sexually risky behavior.

The 7-item Parent-Adolescent Relationships Questionnaire (P-ARQ) [21] was used to assess the adolescents' satisfaction regarding their relationships with their mothers/guardians. Examples of items were: "I am satisfied with the love and affection I receive from my parents" and "I am satisfied with the way my mother disciplines me." Possible responses to the items ranged from 1 = "strongly disagree" to 4 = "strongly agree." The total score, which could range from 7 to 28, was obtained by summing the response values across all items, with higher scores indicating good parent-adolescent relationships.

To determine how often the adolescents talked about sexuality and how comfortable they felt about talking to their mothers/guardians about sexuality was assessed by way of the 18-item Parent-Adolescent Sexual Communication Questionnaire (P-ASCQ).[23] The questionnaire consisted of two dimensions: frequency of communication (nine items: i.e., "How often do you talk with your mother about sexual hygiene?") and, comfort in communication (nine items: i.e., "How comfortable do you feel talking with your parents about different kinds of birth control?"). Possible responses to the items about frequency of communication ranged from 1 = "never" to 4 = "always." Possible responses to the items about comfort in communication ranged from 1 = "very uncomfortable" to 4 = "very comfortable." The total score, which could range from 18 to 72, was obtained by summing the response values across all items, with higher scores indicating good sexual communication.

To assess the adolescents' perceptions, regarding their close friends' approval of sexually risky behavior and peer's sexual behavior, the 12-item Peer Approval and Sexual Behavior Questionnaire (PASBQ)[30, 32] was used. The questionnaire consisted of two dimensions: peer approval of sexual activity and peer sexual behavior. The peer approval of sexual activity component of the questionnaire consisted of five items (i.e., "Do your close friends approve of having sexual intercourse with your boyfriend or lover?"). Possible responses to the items ranged from 1 = "strongly agree" to 4 = "strongly disagree." The total score ranged from 5 to 20, with higher scores indicating perceived strong approval of close friends toward sexual activity. The peer sexual behavior component of the questionnaire consisted of seven items (i.e., "How many of your friends have sexual intercourse with their boyfriends?"). Possible responses to the items ranged from 1= "none of them" to 7 = "all of them." The total score ranged from 7 to 49, with higher scores indicating a perception that a large number of friends engaged in sexual behavior.

A modified-version of Sexual Risk Behavior Questionnaire (SRBQ)[20, 35] was used to assess the adolescents' risk behaviors and sexual activities leading to sexual intercourse. The SRBQ was modified by adding eight additional statements focusing on risk behavior behaviors that related to sexual risk-taking behavior. The questionnaire consisted of 18 closed-ended items and nine open-ended items. Examples of the closed-ended items were "Have you ever drunk alcohol?" (risk behavior); and "Have you ever had open mouth kissing with your boyfriend or lover?" (sexual activity). Possible responses to the close-ended items ranged from 1 = "never" to 4 = "always." The total score for the 18 closed-ended items, which ranged from 18 to 72, was obtained by summing the response values across all items, with higher scores indicating greater sexual risk behavior. Examples of the open-ended items were: "At what age did you have your first sexual intercourse?"; "What was the reason for having sexual intercourse with your boyfriend or lover?"; "How many sexual partners have you had?"; When engaging in sexual activity, do you use contraceptives?"; "How many times have you had a sexually transmitted disease?"; "How many pregnancies have you had?"; and, "How many abortions have you had?" Descriptive statistics, including frequencies and percentages, were used to describe the information from these questions.

The content validity of all questionnaires was assessed by three experts (i.e., a public health instructor with expertise in health education, a nursing instructor with expertise in adolescent health, and an instructor with expertise in educational development and women studies). Based upon the experts' feedback, changes made in the questionnaires involved revisions in the accuracy, content, and language usage of the questionnaire items. The revised questionnaires were pilot tested on 30 female adolescents, similar to the study subjects, who were from a school similar to the study school sites, so as to check the reliability of each questionnaire. The reliabilities of the questionnaires, in the pilot test, ranged from 0.62 - 0.81, while the reliabilities of the instruments, in the actual study, ranging from 0.63 - 0.87.

Phase II: Model Development. The purpose of Phase II was to develop a school-based pregnancy prevention model for early adolescent female Thais. During this phase, 14 focus groups and 15 in-depth interviews were conducted to present and discuss findings from data obtained in Phase I of the study, and to propose ideas regarding how to prevent, within the context of the Thai culture, the problem of early teenage pregnancy. The 14 focus groups, each of which lasted 60 to 90 minutes, consisted of eight adolescent groups and six adult groups. The adolescent groups consisted of: two female groups (Group A = 6 participants and Group B = 7 participants); four female peer groups (Group A = 6 participants; Group

B = 6 participants; Group C = 6 participants; and, Group D = 5 participants); and, two male peer groups (Group A = 5 participants and Group B = 6 participants). The six adult groups consisted of: two mother/guardian groups (Group A = 6 participants and Group B = 7 participants); two teacher groups (Group A = 6 participants and Group B = 7 participants); and, two community leader groups (Group A = 6 participants and Group B = 7 participants).

The focus groups for the adolescents took place, after school hours, in a classroom at each of the schools, while the focus groups for the adults took place either in a school classroom, a personal office, or a room in a community hall. The number and type of focus groups were evenly divided between the two schools.

The 15 in-depth interviews, which took 45 to 60 minutes, were conducted with seven of the female adolescent subjects and eight adults (i.e., one school administrator; three public health nurses; two school janitors; and two community leaders). Each interview was audiotaped (with permission) and field notes were taken. The number and type of interviewees were divided between the two communities. The school administrator was from School A. The school administrator from School B was unable to take part in the interviews because of time limitations. Regarding the three public health nurses, two were from Hospital A and one was from Hospital B. For the two janitors and the two community leaders, there was one from each of the two schools and two communities, respectively.

The inclusion criteria for the adolescent subjects, who took part in the in-depth interviews, were that they: had a previous intimate relationship with a member of the opposite sex and were willing to be interviewed. To identify the seven adolescents to be interviewed, the snowball technique was used. To guide the interviews, the PI developed an interview guide based upon the PBT, review of the literature regarding adolescent pregnancy, and findings from Phase I of the study. Prior to use, the interview guide was reviewed and approved by a public health instructor, with expertise in health education, and a public health nurse, with expertise in adolescent health. Examples of the interview questions/statements, were: "What is your opinion regarding premarital sex among today's Thai teenagers?"; What are factors accounting for Thai adolescents' sexual behavior?"; How can mothers/guardians prevent sexual risk behavior among early female adolescents?"; "What does sex education mean to you?"; and, "How can promoting recreational activities for adolescents in your community help prevent sexually risky behavior? Based upon the outcomes of the focus groups, the in-depth interviews, and the statistical analyses of the data obtained during Phase I, the PI developed a provisional model that addressed teenage pregnancy prevention. This model then was used in Phase III of the study.

Phase III: Model Reflection. The objective of Phase III was to share and evaluate, with the participants, the content of the PI-developed provisional teenage pregnancy prevention model, so as to ensure the model had the characteristics believed to be appropriate and important. The participants who reviewed and provided feedback, to the PI about the provisional model, came from both of the schools used as study sites. Participants from School A consisted of two groups: a student group consisting of three female adolescent subjects and three male adolescent school-peers, and an adult group consisting of one teacher, four mother/guardians, one public health nurse and four community leaders. Participants from School B also were divided into two groups: a student group consisting of four female adolescent subjects and three male adolescent school-peers, and an adult group consisting of one teacher, four mothers/guardians, one public health nurse, and five community leaders. All participants in Phase III also took part in Phase II

of the study. Based upon the feedback and recommendations provided by all of the participants, two components were added to the model (i.e., encourage moral principles and provide sexual reproductive health services). Each time one of the groups met with the PI, regarding the model, the session was audiotaped and field notes were taken. Participants reviewed the modified model and suggested additional modifications until they all agreed regarding the content of the final model.

***Data analysis*:** Descriptive statistics were used to analyze the subjects' socio-demographic characteristics and their scores on each of the questionnaires they completed. Pearson's correlation coefficient and multiple regression analysis were used to examine factors related to the adolescents' sexually risky behavior. Content analysis was used to assess the qualitative data obtained from the interviews and focus group discussions.

Results

Sexually risky behavior of female adolescent subjects: The data indicated the female adolescent subjects had: consumed alcohol (n = 53; 34.4%); watched pornography (n = 15; 9.7%); kissed with a closed mouth (n = 19; 12.3%); tried open mouth kissing (n = 16; 10.4%); been touched above the waist, by the opposite sex, through clothing (n = 23;14.9%; been touched below the waist, by the opposite sex, through clothing (n = 11; 7.1%); and, experienced sexual intercourse (n = 6; 4.0%). The average age of the students who experienced sexual intercourse was 13 years. The youngest age reported, for first sexual intercourse experience, was 12 years. The reasons given for engaging in sexual intercourse were falling in love and discovery of sexual arousal. Only one-third (n = 2) of the adolescents, who had experienced sexual intercourse, reported using contraceptives during their last intercourse. The reasons given for not using contraceptives were: they did not intend to have sex and their partner disliked using contraceptives.

Factors influencing sexually risky behavior of female adolescent subjects: Nearly half of the female adolescent subjects (n = 74; 48.1%) had a moderate level of knowledge about sexual reproductive health, while slightly over half (n = 83; 53.9%) disapproved of sexual activity when one is still in school. The vast majority of the female adolescent subjects valued academic achievement (n = 141; 91.6%). Regarding perceptions of parental involvement and monitoring, 40% (n = 62) felt the presence of a moderate level of parental involvement, while 39.6% (n = 61) indicated a moderate level of parental monitoring. Similar results were reported by the mothers/guardians. In addition, the female adolescent subjects: perceived their parents disapproved of sexually risky behavior for one who is in school (n = 97; 63%); enjoyed a good relationship with their mothers (n = 79; 51%); had a low level of communication with their mothers about sex (n = 114; 74%); perceived their close friends disapproved of sexual activities among adolescents (n = 104; 67.5%); believed their close friends had been involved in sexually risky behavior (n = 49; 32%); and, felt comfortable communicating about sex, with their mothers (n = 48; 31%). The survey of mothers/guardians also reported a low level of communication about sex (n = 85; 74%) and discomfort talking about sex (n = 80; 69.5%) with their respective female adolescent. Regression analysis indicated the predictors of sexually risky behavior were: friends' approval of sexual activity, parental monitoring, and parental involvement (see **Table 1**).

Table 1 Predictors of sexual risk behavior (n=154)

Predictive factors	Cumulative R^2	R^2 Change	ß	Beta	t	*p*
1. Friends' approval of sexual activity (FA)	.296	.296	-.665	-.518	-7.741	< .001
2. Parental monitoring	.339	.042	-.166	-.268	-3.689	< .001
3. Parental involvement	.358	.019	.124	.151	2.102	.037

Note: $F_{(3,148)} = 27.472$

Outcomes of the focus groups and in-depth interviews: Qualitative data obtained, during the focus groups and in-depth interviews, were found to be within three major themes: ***awareness and consequences of premarital sex***; ***factors contributing to involvement in sexually risky behavior***; and, ***need for a school-based pregnancy prevention model for female adolescents.*** Regarding ***awareness and consequences of premarital sex***, the adult participants regarded pre-marital sex, among adolescents, as a community problem. Awareness of premarital sex, among adolescents, appeared to be higher among the female adults compared to the male adults. Most likely this was due to the fact that mothers with daughters are more likely to be sensitive to the issue because of potential pregnancy and subsequent marriage. As one mother stated: *"If my daughter engaged in sex, I would feel bad. However, I would have to accept it. I would talk to the boy's parents, asking for responsibility (i.e., He should marry my daughter?)."*

Both the female adolescent subjects and the male adolescent school-peers reported having a lover is quite common and acceptable among Thai adolescents. Some of them admitted that pre-marital sex was a common behavior. They thought that it was improper behavior, but that it was difficult to prohibit teens from this behavior. A few of the adolescents stated that sex was acceptable, if they used contraception, and that an unwanted pregnancy was of concern. The majority of the adolescent and adult participants indicated that pregnancy and early parenthood created problems for adolescents regarding continuation of their education. One teacher stated: *"Female students, who become pregnant, have to quit their studies until they give birth. These students never come back to school. I think it's hard to come to back to school and take care of a baby at the same time."*

Factors contributing to involvement in sexually risky behavior were found to fall within three categories: individual, family and environmental. Regarding individual factors, the majority of teachers, public health nurses and community leaders mentioned that emotional change, during puberty, and lack of self-confidence make adolescents engage in sexually risky behavior. They all commented that changing sex values, due to the influence of Western cultures in Thai society, have resulted in sexual activity before marriage as common and acceptable for both male and female adolescents. As one teacher stated: *"We should think about emotional changes in adolescents. They have feelings of love and sexual desires. When they are exposed to sexual media, for example pornographic books or video clips, they will be stimulated to engage in sexual behavior."*

Adult participants believed that family factors that contributed to adolescents' involvement in sexually risky behavior were related to a lack of: parental monitoring; good parental role modeling; and,

good family relationships. When these factors are present, adolescents are more likely to engage in sexually risky behavior. As one community leader indicated: *"To date, parents have to work to earn money and don't have time to discipline their children. Parents and children rarely spend time together. In some families, teens live with their grandmothers or grandfathers. Grandparents are too old to take care of their grandchildren. Thus, adolescents are more likely to engage in sexually risky behavior."*

Finally, regarding environmental factors that contribute to adolescents' involvement in sexually risky behavior, participants believed was the result of peers' attitudes and behaviors related to sexual activity, the media, and entertainment establishments (i.e., pubs, internet cafes and karaoke bars). Adolescents who associate with a deviant peer group were seen as being more likely to become involved in sexually risky behavior. One public health nurse stated: *"Adolescents want to be accepted and loved by their group of peers. They believe in their friends more than they believe in their parents or teachers."* This belief was supported further by the adolescent participants who indicated they preferred to talk to their friends, than to adults, about sex. The adolescent participants mentioned that adults often blame them for things that they do, while their friends always listen to them. In terms of the influence media has on sexually risky behavior, all participants indicated there was easy access to pornographic media, via mobile phones or the internet, and many explicit love scenes in both Western and Thai movies. One teacher stated: *"I think the media has a great influence on sexual behavior among adolescents. There are many kinds of media, such as the internet, mobile phones, and magazines. So it is easy for adolescents to access pornographic media."* The establishments that were seen as places for adolescents to hang out (i.e., pubs, internet cafes and karaoke bars) were viewed, by the participants, as sources for drinking, taking drugs, and gang involvement. Engagement in drinking, taking drugs, and gang involvement created situations where the likelihood of engaging in unprotected sex was greatly increased.

The need for ***a school-based pregnancy prevention model for early adolescent female Thais*** was the third theme that emerged from the interviews and focus group discussions. As a result, a school-based teenage pregnancy prevention model was developed based on analysis of the quantitative and qualitative data obtained during Phase I and II of the study. The initial components of the model were: strengthen a caring family and parental monitoring; promote recreational interests among adolescents; provide sex education to adolescents; establish peer leaders; and, create school-family-community networks. Strengthening a caring family and parental monitoring, as part of a pregnancy prevention program, was believed, by the study participants, to help prevent pregnancy among adolescents, while including recreational activities for adolescents was thought to divert adolescents' attention away from sexually risky behavior. The provision of sex education was strongly encouraged by the study participants, since the mothers/guardians of the adolescents felt uncomfortable about teaching their children about sex. The mother/guardians were fearful that teaching their adolescents about sex would only encourage them to engage in sexual activity. In addition, the mothers/guardians did not see themselves as good sex educators because of their limited knowledge about the subject matter. Establishing peer leaders, for transference of sexual knowledge and to act as good role models, was recommended by the study participants, because they believed that adolescents often are more willing to listen to their peers than to adults (i.e., parents and teachers). Finally, creating school-family-community networks was believed, especially by the adult participants, to be an important component of the model, since collaboration among school employees, family members, and community leaders might help in preventing teenage pregnancy.

The initial model that was developed was repeatedly presented to the participants. As a result of the repeated reviews of the model, among the participants, it was decided to include two additional model components: encourage moral principles and provide sexual reproductive health services. Finally, the participants decided the model should have four major interacting parts (i.e., family, school, individual, and community) under which the recommended components would appear. The interactions among the major components would include such tasks as: sharing information, supporting and involving, supporting and promoting, supporting environment, supporting, and collaboration. It was also decided that the components, caring family and parental monitoring, would have their wording changed to: promote family relationships, promote family communication, and promote family roles. The final model, which all participants agreed upon, is shown in **Figure 1**.

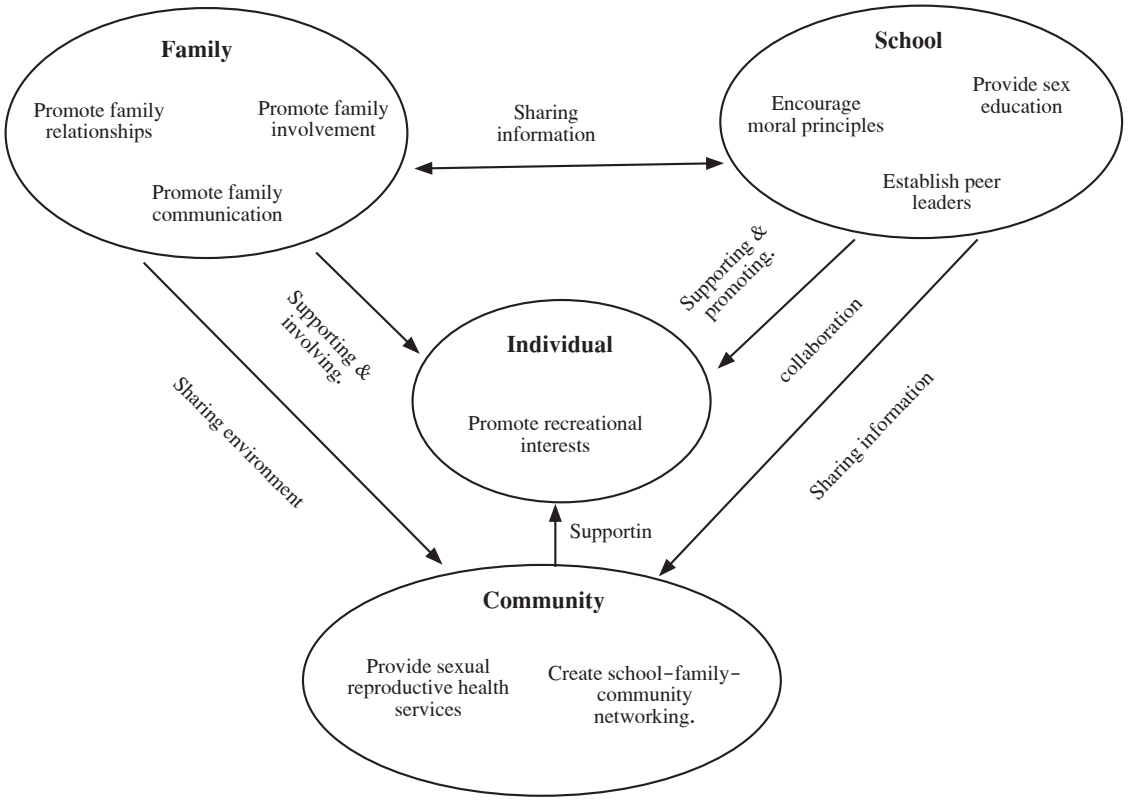

Figure 1 A school-based pregnancy prevention model for early adolescent female Thais

Discussion

Process of the model development: The school-based teenage pregnancy prevention model was developed, using the Problem Behavior Theory[19, 27] as a conceptual formwork, and based on quantitative and qualitative data. The advantages of using both quantitative and qualitative approaches were: involvement of adolescents, mother/guardians, and key stakeholder in all aspects of the model development; creation of activities to prevent adolescent pregnancies at the individual, family and community levels; and, relevancy of the model to the needs of female adolescents, as well as the mother/guardians, and stakeholders. By having all study participants involved in the development of the model facilitated and enhanced a sense of model ownership. Prior studies have reported the effectiveness of using similar actions when developing and implementing program models.[37-40] The actions taken, during model development, helped to raise the study participants' awareness of the adolescent pregnancy problem in Thailand. Finally, as pointed out in the literature, when participants work together to create a model or program, the sustainability of the implemented model/program are greatly increased.[37, 38]

The school-based pregnancy prevention model for early adolescent female Thais: The fact the study results focused on the importance that the individual, family, school and community played in the development of the key components of the model was similar to prior studies.[14, 22, 34] In addition, these results supported the PBT regarding the role that interactions play between individuals and their environment. For example, the sexual values, among the Thai adolescents in this study, were changing due to the influence of media from Western cultures, as well as the easy accessibility of pornographic materials.

The participants pointed out the need for more parental monitoring and better parent-adolescents communication regarding sex. Although the mother/guardians in the study felt ill-prepared to provide sex education and were afraid that providing sex education to their adolescents would only encourage them to engage in risky sexual behavior, they believed that sex education was an important component for inclusion in the pregnancy prevention model. This result was similar to previous studies that found parental monitoring/supervision was associated with risky sexual behavior of teens. If parents either monitored the teenagers insufficiently or did so excessively, the teenagers were much more likely to engage in sexual activity, at an early age, resulting in a pregnancy.[14, 22]

The study results point out the importance peers play in influencing an adolescent's sexual behavior. As a result, two components of the model included the provision of sex education, as well as the establishment of peer leaders. The inclusion of these two model components were similar to prior programs that included sex education, along with the training of peer educators to transfer knowledge and experiences to other youth regarding the prevention of sexually risky behavior.[3, 18]

Finally, the adult participants perceived adolescent pregnancy as a community problem that required creation of school-family-community networks. Thus, the model included multi-level collaboration that involved adolescents, family members, the school, and community members. The inclusion of collaboration among these various entities was similar to prior school-based programs that have been found to be effective.[25, 26] Collaboration between school and community has been found to be an effective strategy to reduce many health problems, such as pregnancy and substance abuse among adolescents.[41, 42]

Limitations and Recommendations

When applying the findings, the study's limitations need to be taken into consideration. First, the study was conducted using only 7th and 8th grade students from two public schools located in two communities within one geographic area of Thailand.

Thus, the model is not generalizable to students across Thailand, but only to students from the same cultural context as those who took part in the study. Secondly, one has to assume all of the participants were honest in their responses, especially given the content being study. Therefore, some caution needs to be used when applying the findings.

The study needs to be replicated using similar students from other geographic areas across Thailand, as well as students receiving their education from non-public schools. In addition, the inclusion of observation, in the study design, would be advisable, since it would allow a source of data that would not rely upon the participants' honest responses to a socially sensitive topic (i.e., sexual behavior).

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การพัฒนารูปแบบป้องกันการตั้งครรภ์ของวัยรุ่นหญิงไทยตอนต้นโดยใช้โรงเรียนเป็นฐาน

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บทคัดย่อ : การศึกษาครั้งนี้เป็นการศึกษาเพื่อพัฒนารูปแบบป้องกันการตั้งครรภ์ของวัยรุ่นหญิงไทยตอนต้น โดยใช้โรงเรียนเป็นฐาน รูปแบบการศึกษาใช้ระเบียบวิจัยเชิงปริมาณร่วมกับเชิงคุณภาพ โดยแบ่งออกเป็น 3 ระยะ คือ 1) การประเมินสถานการณ์ เป็นการสำรวจภาคตัดขวางโดยใช้ทฤษฎีพฤติกรรมที่เป็นปัญหาเป็นกรอบแนวคิด เก็บข้อมูลจากการตอบแบบสอบถามด้วยตนเองของนักเรียนหญิงที่ศึกษาอยู่ชั้นมัธยมศึกษาปีที่ 1-2 สังกัดกรมสามัญศึกษา จังหวัดพะเยา จำนวน 154 คน และมารดาหรือผู้ปกครอง จำนวน 115 คน 2) การพัฒนารูปแบบโปรแกรม เก็บข้อมูลโดยวิธีการสนทนากลุ่มจำนวน 14 กลุ่ม และสัมภาษณ์เชิงลึก 15 คน 3) การสะท้อนข้อมูล เพื่อยืนยันว่ารูปแบบโปรแกรมป้องกันการตั้งครรภ์ตรงกับความต้องการของวัยรุ่นและกลุ่มผู้มีส่วนได้ส่วนเสีย กลุ่มตัวอย่างในการศึกษาครั้งนี้ประกอบด้วยนักเรียนหญิง มารดา/ผู้ปกครอง เพื่อน ผู้บริหารโรงเรียน ครู ภารโรง เจ้าหน้าที่สาธารณสุข และผู้นำชุมชน การวิเคราะห์ข้อมูลเชิงปริมาณใช้สถิติเชิงพรรณนา สัมประสิทธ์สหสัมพันธ์เพียรสันและการวิเคราะห์ถดถอยพหุคูณแบบขั้นตอน ข้อมูลเชิงคุณภาพใช้การวิเคราะห์เชิงเนื้อหาผลการศึกษาพบว่า ปัจจัยที่สามารถทำนายพฤติกรรมเสี่ยงทางเพศของวัยรุ่นหญิงตอนต้น ได้แก่ ทัศคติของเพื่อนต่อพฤติกรรมทางเพศ การกำกับดูแลและการมีส่วนร่วมของมารดา ซึ่งสามารถทำนายได้ร้อยละ 35.80 รูปแบบโปรมแกรมป้องกันการตั้งครรภ์ในวัยรุ่นหญิงตอนต้นแบ่งออกเป็น 4 ส่วน คือ ตัววัยรุ่นเอง ครอบครัว โรงเรียนและชุมชน รูปแบบโปรแกรม มี 9 องค์ประกอบที่สำคัญคือ 1ส่งเสริมสัมพันธภาพในครอบครัว 2) ส่งเสริมการสื่อสารในครอบครัว 3) ส่งเสริมบทบาทครอบครัว 4) สร้างแกนนำเยาวชน 5) ส่งเสริมให้วัยรุ่นทำกิจกรรมที่เป็นประโยชน์ยามว่าง 6) ให้ความรู้เรื่องเพศศึกษากับวัยรุ่น 7) สร้างเครือข่ายโรงเรียน บ้านและชุมชน 8) สนับสนุนเรื่องคุณธรรม จริยธรรมในวัยรุ่น และ 9) จัดระบบบริการอนามัยเจริญพันธุ์ในวัยรุ่นการศึกษาครั้งนี้ช่วยให้เกิดความเข้าใจพฤติกรรมเสี่ยงทางเพศของวัยรุ่นหญิงตอนต้นและปัจจัยที่เกี่ยวข้องมากยิ่งขึ้น ปัจจัยความสำเร็จและความยั่งยืนของโปรแรม คือ ความต้องการและการมีส่วนร่วมของวัยรุ่น ครอบครัวและกลุ่มผู้มีส่วนได้ส่วนเสียในการดำเนินกิจกรรม

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