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Promoting health literacy about pregnancy prevention among adolescent students: A qualitative study

Rattana Tanthaisong[1] and Peerapong Boonsawasdgulchai[2]*

[1] Department of Midwifery, Faculty of Nursing, Khon Kaen University, Khon Kaen 40002, Thailand
[2] Department of Education, Research and Nursing Administration, Faculty of Nursing, Khon Kaen University, Khon Kaen 40002, Thailand

***Corresponding author**: Rattana Tanthaisong
rattta@kku.ac.th*

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ABSTRACT

This critical ethnographic study aimed to examine the promotion of health literacy about pregnancy prevention among adolescent students. Conducted between December 2022 and August 2024, the study included 65 participants, comprising key informants such as adolescent students, school administrators, teachers, individuals responsible for educational and health services, parents or guardians, peers, and additional general informants identified by the key informants. Data were collected through in-depth interviews, participant and non-participant observations, and document analysis. Content analysis was employed for data interpretation. The findings indicated that fostering health literacy in pregnancy prevention among adolescent students necessitates collaboration and support from multiple stakeholders. Seven key strategies were identified: (1) enhancing knowledge of sexual health, pregnancy prevention, and related topics; (2) developing essential skills for effective pregnancy prevention; (3) improving access to health services and contraceptive resources; (4) raising awareness of the significance of pregnancy prevention; (5) establishing safe zone for discussion and counseling on sexual health and pregnancy prevention; (6) fostering leadership and networks dedicated to adolescent pregnancy prevention; and (7) strengthening intersectoral coordination with relevant agencies and organizations. These findings underscored the necessity of a multidimensional approach to effectively promote health literacy and prevent adolescent pregnancy.

Keywords: health literacy; pregnancy prevention; adolescent pregnancy; teenage pregnancy; adolescent students

1. INTRODUCTION

Adolescent pregnancy remains a critical global public health and social concern. Worldwide statistics indicate that approximately 11% of live births occur among adolescent girls aged 15 to 19, with over 90% concentrated in low- and middle-income countries (Ganchimeg et al., 2014). In Thailand, although the overall adolescent pregnancy rate has shown a declining trend, the country has yet to achieve its targeted reductions. Between 2018 and 2021, the live birth rates among adolescent girls aged 15 to 19 were recorded at 34.70, 31.21, 29.61, and 27.48 per 1,000 women in this age group, respectively (World Bank, n.d.). Furthermore, evidence suggests that 58.5% of adolescent pregnancies are unintended, with around 33.3% occurring among students (Bureau of Reproductive

Health, 2020). These findings highlight the persistent challenges in addressing adolescent pregnancy.

Adolescent pregnancy has far-reaching consequences for pregnant adolescents, their infants, their families, the economy, and society at large. Adolescent mothers face an elevated risk of complications during pregnancy, childbirth, and the postpartum period (Ganchimeg et al., 2014; Pensirinapa, 2021). They are more susceptible to mental health disorders (UNICEF, 2015), which, in some cases, may lead to unsafe abortion practices, posing a risk of severe health complications and mortality (World Health Organization, 2020). Beyond health risks, adolescent mothers often experience disruptions in their education, limiting their future employment prospects and earning potential (Gyan, 2013). Infants born to adolescent mothers are at an increased risk of adverse health outcomes, including low birth weight, preterm birth, perinatal complications, stillbirth, and inadequate postnatal care (Ganchimeg et al., 2014).

The implications extend to families and society. Families may experience stigma and social rejection, along with increased financial and caregiving burdens to support both the adolescent mother and her child (van Zyl et al., 2015; Pensirinapa, 2021). At a societal level, adolescent pregnancy imposes economic strain, necessitating increased social welfare support for adolescent mothers and their children, while simultaneously reducing their long-term contributions to the economy through taxation (Pensirinapa, 2021). These multifaceted consequences underscore the urgency of effective interventions to address and prevent adolescent pregnancy.

In response to the issue of adolescent pregnancy, Thailand has enacted a range of policies and laws aimed at preventing and addressing this challenge. These measures are designed to safeguard adolescents' rights to access comprehensive information and health services, thereby empowering them to make informed decisions regarding pregnancy prevention and the management of unplanned pregnancies. The overarching goal of these initiatives is to promote pregnancies at an appropriate time and to ensure healthy births, particularly in the context of the country's declining birth rate. Key strategies for implementation include the provision of sex education in schools, the promotion of family involvement in discussions about sexual health, and the establishment of youth-friendly health services (Bureau of Reproductive Health, 2017). Despite these concerted efforts, adolescent pregnancy continues to present a persistent challenge that warrants ongoing attention and further intervention.

Health literacy is a critical strategy for promoting health and preventing adolescent pregnancies. Strong sexual and reproductive health literacy can help adolescents delay sexual activity, reduce the risk of unplanned pregnancies, and increase contraceptive use (Dongarwar & Salihu, 2019). Studies show that adolescents with higher health literacy engage in more effective pregnancy prevention behaviors (Sangwalee & Norkaew, 2022). Conversely, those with lower health literacy are at greater risk of pregnancy (Srisuriyawet & Homsin, 2022). Factors influencing adolescent health literacy include personal traits, peer and parental influences, and the education and health systems (Manganello, 2008).

Research indicates that adolescents frequently possess insufficient health literacy in pregnancy prevention, with many displaying low to moderate levels of understanding (Santisouk et al., 2020; Lakhmudien et al., 2019; Seedaket & Chotchai, 2021; Intarakamhang & Khumthong, 2017; Ngomsangad et al., 2019). They face difficulties in listening, reading, writing, and communicating information about pregnancy prevention, and they struggle to access reliable sources of information and health services for informed decision-making. Adolescents often trust media information without critical evaluation (Ngomsangad et al., 2019). A field study in Khon Kaen Province revealed that despite receiving pregnancy prevention education, students had trouble recalling how to apply it. Most sought information online, with few consulting parents or teachers, and rarely assessing the credibility of the sources.

Adolescents often lack sufficient health literacy regarding pregnancy prevention. Existing research has not focused on guidelines for enhancing health literacy in this area from the perspectives of adolescent students and key stakeholders. This study aimed to examine the current strategy for promoting health literacy about pregnancy prevention among adolescent students by incorporating stakeholder perspectives, informing policy, or guiding educational programs.

2. MATERIALS AND METHODS

2.1 Study design and setting

This study employed qualitative research methods through critical ethnography, grounded in the principles of postmodernism and interpretivism. It was conducted in a secondary school managed by the local administrative organization in Khon Kaen Province, Thailand, from December 2022 to August 2024. The study comprises three stages: 1) examining the school context; 2) exploring the circumstances surrounding the promotion of health literacy about pregnancy prevention among adolescent students; and 3) synthesizing findings related to enhancing health literacy for pregnancy prevention in this context.

2.2 Participants

A total of 65 informants were collected, consisting of 1) key informants (60 individuals) including 17 high school students (both female and male) aged 15–19 years with relationship experience, 5 school administrators, 9 teachers, 10 parents or guardians, 10 close friends of the students, and 9 individuals involved in organizing educational and health services, such as local administrative organization officials, health care providers and providers of technology and information media for learning in schools, and 2) general informants (5 individuals); these individuals were identified by the key informants, including students, personnel from government agencies, private sector representatives, and non-profit organizations.

2.3 Ethical considerations

This research project has received ethical approval for human research from the Human Research Ethics Committee at Khon Kaen University (Approval no. 4.1.01: 44/2565, reference no. HE652174) on November 28, 2022, and from the Human Research Ethics Committee at Khon Kaen Hospital (Reference no. KEMOU65027) on December 21, 2022.

2.4 Data collection

Data collection methods employed in this study included in-depth interviews, both participatory and non-participatory observations, as well as documentary analysis. The researcher conducted interviews with adolescent students to explore the promotion of health literacy in pregnancy prevention, focusing on the information and support they received from their families, friends, schools, relevant agencies, and other sources. Additionally, interviews were conducted with school administrators, teachers, and individuals involved in organizing education and health services. Parents, guardians, and friends of adolescent students were also interviewed to examine their roles and involvement in promoting health literacy for pregnancy prevention.

Purposive and snowball sampling techniques were used to select informants. The researchers initially coordinated with a local 'gatekeeper' to identify key informants. Following this, participants were provided with detailed information about the study's objectives, the data collection process, their right to participate voluntarily, and the confidentiality of their responses. Once informed consent was obtained, participants were asked to sign consent forms. Except for adolescent students and their parents, verbal consent was required. For those under 18 years old, parent or guardian consent was required prior to participation. Interviews were scheduled at the participants' convenience.

Each interview lasted approximately 45 to 50 min, and audio was recorded. The interviews were conducted one or two times, with additional participants identified through snowball sampling, continuing until data saturation was reached and no new themes emerged.

Observational data were also collected through both participatory and non-participatory observations to gain insights into the behaviors, cultural practices, beliefs, and activities of adolescent students related to health literacy in pregnancy prevention. Observations included the physical environment of the school, as well as non-verbal cues such as gestures and facial expressions during interviews. The researcher also documented the roles, participation, and interactions of informants in various activities. Field notes were maintained throughout the research process to record these observations.

2.5 Data analysis

Data were analyzed using content analysis based on Colaizzi's method, which involves seven distinct steps: 1) thoroughly reading and reviewing the collected data multiple times to gain a deep understanding; 2) coding or indexing the data to categorize it according to the research topics, and grouping the codes into sub-themes; 3) identifying key sentences or significant passages that are relevant to the identified topics; 4) clustering text with similar meanings together, highlighting these as main themes, and assigning appropriate labels to these themes; 5) providing a comprehensive explanation of the meanings underlying the identified themes; 6) presenting the overall structure of the key issues examined; and 7) validating the findings through consultations with informants and experts (Shosha, 2012).

3. RESULTS

The study's results revealed that enhancing health literacy regarding pregnancy prevention among adolescent students involves five key stakeholders: students, schools, families, peers, and relevant government, private, and non-governmental organizations. The strategies for promoting health literacy about pregnancy prevention could be summarized into seven key approaches, as outlined below:

3.1 Enhancing knowledge of sexual health, pregnancy prevention, and related topics

Adolescent students are provided with education on sexual health, methods of pregnancy prevention, and other knowledge to prevent unintended pregnancies, such as legal rights regarding contraception and managing unintended pregnancies. Several approaches for implementation have been identified, including the following:

3.1.1 Pursuing knowledge by the adolescents themselves

Adolescent students primarily seek knowledge from the internet or use online media. Some engage in discussions and information exchange with peers or trusted individuals, consult with healthcare professionals, participate in sex education workshops, or study information from product labels.

"The internet is likely the primary source, as mobile phones and computers are widely available. If I want to know something, a simple search on Google suffices. However, if immediate answers are desired, I might ask my parents. It depends on my preference for how I wish to obtain information, but generally, searching the internet is the more common approach." A 16-year-old male student.

3.1.2 Provision in the school curriculum

The school provides sex education through health education courses and instructs students on media and information technology use. However, current sex education remains largely general in scope, focusing on topics such as issues and causes of sexual conflict, as well as strategies for preventing and mitigating sexual conflicts within the family. The curriculum does not directly emphasize pregnancy prevention, such as information on various contraceptive methods or management following unprotected sexual intercourse. Teachers frequently highlight the avoidance of risky behaviors associated with sexual activity—such as nightlife participation, alcohol consumption, substance use, and unsupervised situations with members of the opposite sex. While teachers often advise students to use protection every time they engage in sexual activity, they generally do not provide detailed explanations on the use of specific contraceptive methods. This is often due to the assumption that students already possess such knowledge, as well as teachers' lack of confidence regarding their own knowledge and ability to effectively communicate about sexual health topics with students.

"In the case of health education, this is provided for all academic tracks. Sex education, while a component of the curriculum, is not the main focus and is not emphasized extensively. Topics related to sexual education, such as self-protection, are included but not explored in great depth. If a more in-depth approach is needed, it will be organized as a specific project focused solely on the topic. Generally, in regular subjects, regardless of the discipline, the content is presented in a broad context without delving deeply. To address specific areas in greater depth, extracurricular activities must be established." A 48-year-old deputy school director, academic affairs division.

"I believe that they already possess this knowledge. I have not provided in-depth instruction on pregnancy prevention; rather, I have addressed the topic in general terms, emphasizing the importance of self-care, caution, and the need for proper protection. However, I have not explained the specific steps or methods in detail. Most of the guidance I provide pertains to condom use, and I tend to ask students if they know how to use them, assuming that they are already familiar with these practices." A 40-year-old health education teacher.

3.1.3 Providing sex education in health service units or relevant organizations

Health service units and non-profit organizations provide sexual health education for adolescents through both proactive and passive approaches. Passive services involve offering information and counseling at clinics, whereas proactive services are delivered through activities and outreach programs conducted outside of clinical settings. Examples of these proactive initiatives include organizing booths and exhibitions at schools during school events, as well as participating in relevant activities on significant occasions in collaboration with partner organizations.

"Our clinic offers both reactive and proactive services. The reactive services are provided here, which include the implantation of contraceptive devices, counseling on sexually transmitted infections (STIs), contraceptive counseling, and the insertion and removal of contraceptive implants. We also offer pregnancy testing, counseling for unintended pregnancies, and treatment for sexually transmitted infections. For proactive services, we collaborate with various networks and NGOs to reach adolescents in external settings, such as schools. For example, we participate in school events like open houses by setting up informational booths, organizing exhibitions, providing educational sessions, and serving as guest speakers to disseminate sexual and reproductive health information." A 56-year-old registered nurse.

3.1.4 Organizing sex educational activities/ projects

Local administrative organizations and network organizations, such as health service units, associations, and foundations, collaborate in organizing activities to provide knowledge and promote safe sexual practices among students both within and outside the school.

"Pregnancy-related matters are primarily managed by the overseeing authorities, specifically through projects of the Public Health and Environmental Department. These initiatives are designed to provide care and support, such as conducting training and offering educational sessions for students. Additionally, health service units responsible for overseeing the school also provide support and care." A 46-year-old deputy school director, planning and budget division.

3.1.5 Creating and disseminating educational media

Some health service units have created applications that offer adolescents easy access to information about pregnancy prevention and that are available for free download.

"When we visit the school, we provide them with our contact number and offer an application that they can use to access information. The application is created by us to ensure that they have a reliable resource for obtaining information." A 59-year-old registered nurse.

3.1.6 Providing information or recommendations from individuals

Parents, teachers, and peers offer recommendations to adolescent students, such as suggesting information sources, helping to search for information, and advising on methods of pregnancy prevention. However, they do not provide detailed explanations of each pregnancy prevention method. This is because some parents believe that adolescents can learn about these topics on their own or have already been taught, while peers believe that adolescents possess more knowledge due to having had romantic relationships. Teachers, on the other hand, assume that students already have sufficient knowledge and sometimes think that some students may even know more than the teachers themselves.

"Adolescents are curious and eager to explore (about sexuality), and we cannot prevent them from doing so. However, we advise them by saying things like, 'If you're in a relationship, use condoms,' or 'Take your contraceptive pills.' We make sure to continually remind and counsel them on these matters." A 36-year-old female student's mother.

"I advise them to search on Google to find out what should be done. If they don't understand, they can ask me to read the information, comprehend it, and then explain it to them." A 17-year-old female student.

3.1.7 Establishing a school environment to promote sex education

Schools have promoted sex education for students through the establishment of informational boards and educational media on sexual health, as well as the setup of booths and boards to provide knowledge during school activities organized by students from the First Aid club. Additionally, free internet access is provided within the school to facilitate information retrieval.

"In addition to the 'To Be Number One' group and the school nurse's office, they occasionally set up informational boards and display signs for public awareness." A 56-year-old school director.

"The internet signal is available at various points throughout the school. For example, in my building, there is internet access. When asked whether it is functional, it is usable; though the signal strength is not particularly strong, it is still sufficient for use." A 17-year-old male student.

3.2 Developing essential skills for effective pregnancy prevention

This involves promoting the necessary skills among adolescents to prevent pregnancy, which includes the following:

3.2.1 Organizing activities and health services to develop sexual and pregnancy prevention skills

Local government organizations, health service units, and relevant agencies collaborate with schools to organize activities that develop sexual skills and pregnancy prevention for students. Additionally, health service units also provide health services for adolescents, such as skills in condom use, sexual risk assessment, sexual negotiation, and media usage.

"We collaborate with the Public Health and Environmental Department of the local government organization and hospitals to provide direct education and training on adolescent pregnancy issues every year. The training covers topics such as pregnancy prevention, HIV testing, and knowledge about sexually transmitted infections." A 44-year-old deputy school director, administration division.

"We educate both females and males. Females need to learn negotiation skills and consider the potential consequences if an error occurs. If you use condoms, you can engage in safe sexual activity. Negotiation is essential, and you must also ask yourself; Can you be sure that the person you are with today will be your future spouse?" A 59-year-old registered nurse.

3.2.2 Establishing life skills development activities

The school organizes activities aimed at reducing risky behavior that may lead to sexual issues. These include training on substance abuse prevention, mindfulness training for life management, safe use of information technology, and training and skill-building in counseling and seeking advice.

"The school implements a drug prevention program within the educational institution, which is organized annually. The program includes various activities, such as awareness campaigns and educational sessions." A 44-year-old deputy school director, administration division.

3.3 Improving access to health services and contraceptive resources, including:

3.3.1 Providing diverse and accessible reproductive health services

Including free condom distribution without requiring personal information from adolescents and free contraceptive services as per entitlements, such as implantable contraceptives, injectable contraceptives, and oral contraceptive pills, as well as emergency contraception.

"We strive to provide a one-stop service. We have signage at the entrance indicating that there is no need to make a registration card for our clinic. In some cases, individuals are directly referred to us by their peers, and we handle the registration for them. The implantable contraceptive service is provided free of charge because it is mandated by law under the relevant act, which allows this group to access the service at no cost. As a result, young individuals can easily access the service." A 56-year-old registered nurse.

3.3.2 Publicizing available health services through various channels

Including social media platforms such as Facebook, TikTok, Line, etc., and interpersonal referrals, such as recommendations from adolescents who have previously used the services. Additionally, promotion is carried out by hospital staff, health center personnel, village health volunteers, teachers, and others.

"We utilize social media platforms, such as Facebook and Line ID, along with a hotline for direct communication. Additionally, our network members help promote our services through word-of-mouth, and NGOs involved in projects also assist with our promotion." A 56-year-old registered nurse.

3.3.3 Supporting and distributing contraceptive devices

Including the provision of free condoms by schools, healthcare service units, and relevant organizations. Condoms and contraceptive pills are distributed during campaign activities. In some families, parents recommend or provide contraceptives to their children. Additionally, condoms are shared among peers in schools.

"When we provide education or conduct training, we ensure that both females and males have equal access to condoms. We do not distribute them solely to boys; girls are also provided with condoms if they request them." A 59-year-old registered nurse.

"My friend often asks me for condoms. He is male, and since I am close to him, we can discuss anything openly. I keep a large stock of condoms in my room, usually purchasing packs of about 100–200 pieces, and my friend frequently comes to ask for them." A 17-year-old female student.

3.3.4 Guiding, facilitating, and referring adolescents to receive health services

Including recommendations of healthcare facilities for adolescent students by parents, peers, teachers, and relevant staff members. Additionally, some parents and peers accompany adolescents to receive contraceptive services.

"I took my friend to get the implant because she enjoys going out at night, and I was concerned about potential situations that could arise. I sought a preventive method, which is why I insisted that she get the implant. I told her, 'You need to get the implant because if you make a mistake, nothing will happen." A 17-year-old female student.

"I have seen news reports about adolescents becoming pregnant at an early age, including pregnancies during their school years, which made me concerned. Since her younger sibling has a boyfriend and is at an age where this is common, I don't always monitor her activities. Therefore, as a preventive measure, I decided to arrange for her to get the contraceptive implant, which was inserted under the skin of her arm." A 45-year-old female student's mother.

3.4 Raising awareness about pregnancy prevention

This strategy encourages adolescent students to recognize the importance of preventing pregnancy and avoiding risky behaviors. It includes the following:

3.4.1 Educating on appropriate behaviors to prevent the risk of pregnancy

conducted by parents, guardians, and teachers. This education covers various topics, such as respecting the rights of others, practicing self-respect, focusing on academic achievement, engaging in romantic relationships or sexual activity only after completing education, and learning to love oneself.

"I frequently discuss this issue, providing examples and showing them the relevant laws. I explain that cases like this may fall under the category of statutory rape. I emphasize that it is not just about whether the girl agrees, as she is still a minor. It depends on whether her parents allow it. I explain that if this situation occurs, it will lead to these kinds of problems, and I clarify the legal implications." A 52-year-old male student's mother.

"I tell her that, as a woman, she should Ruk-Nuan-Sa-Nguan-Tua (practice self-respect and maintain her dignity), as the time is not yet right. She responds by saying that she understands." A 46-year-old female student's mother.

3.4.2 Warning and prohibiting behaviors leading to sexual risks

Families, teachers, and peers play a role in advising and prohibiting adolescents from engaging in risky behaviors. This includes prohibiting having a romantic partner, engaging in sexual activity, or causing a partner to become pregnant; prohibiting involvement with alcohol and drugs; discouraging late-night outings; prohibiting romantic behaviors in school; avoiding being alone with a partner; advising the use of appropriate online media; and providing warnings when students exhibit inappropriate romantic behaviors.

"Sometimes, he goes out late at night, which can be risky. I tell him not to go out late and not to engage in inappropriate behavior. I have to forbid him from drinking alcohol, engaging in harmful activities, or participating in gatherings that could lead to trouble. I simply tell him that it is wrong and that he should not do it, as it is harmful." A 49-year-old male student's aunt.

"Whenever they engage in intimate behavior, whether in secluded areas where people cannot see them or in public places, such as the cafeteria, where they sit closely, lie on each other's laps, or lean on each other, I intervene immediately. I call them in to make a record. This is part of the enforcement and preventive measures, ensuring that such behaviors are not displayed within the educational institution." A 44-year-old deputy school director, administration division.

3.4.3 Emphasizing and highlighting the importance of pregnancy prevention

Families, friends, teachers, healthcare staff, and personnel from relevant organizations all play an active role in motivating and reinforcing the importance of pregnancy prevention for adolescent students. This includes highlighting the benefits and necessity of protection during sexual activity, as well as pointing out the negative consequences of unprotected sex and the impact of pregnancy during the school years.

"I explain the reason to her and make comparisons, such as if she becomes pregnant before marriage or while still in school, who will take care of the child? Since they do not have an income and have not completed their education, I have to work to earn money. I compare this situation with that of someone who is focused on their studies and not pregnant. I point out the differences." A 45-year-old female student's mother.

3.5 Establishing safe zones for discussions and counseling on sexual health and pregnancy prevention

This promotes adolescents' comfort and confidence in sharing personal matters or seeking advice and guidance from others to prevent pregnancy. This includes:

3.5.1 Communicating and having discussions about sexual health within families

In certain families, parents or guardians adjust their mindsets and accept it when they perceive that their children have romantic partners or are sexually active. They remain open to listening, avoid setting barriers to sexual communication, and are ready to offer guidance and advice to their children.

"I always tell her that if she has anything to discuss, she should consult with me, not with others. She can talk to me, and I'm not judging or prohibiting her. I made it clear to her that I'm not forbidding her from having a relationship or from experiencing love, but it must be done under my supervision. I want her to talk to me so that I can help resolve any issues correctly. As a result, she said that from now on, she won't hide things from me and will talk to me more. This has helped us to become closer." A 36-year-old female student's mother.

3.5.2 Availability of counseling services on sexuality and pregnancy prevention for adolescents

Health service units and relevant organizations offer sexuality and pregnancy prevention counseling services for adolescents through various channels, both during and outside of regular office hours. These include in-person consultations at clinics as well as online counseling services, such as through phone calls, LINE, Facebook, and other platforms.

"They can access counseling through various channels, whether by walking in, via LINE, phone calls, or Facebook, where they can send an inbox message to inquire. This ensures that our adolescents, when facing problems, have a solution. At the very least, they have someone to listen to them, understand them, and find ways to resolve their issues." A 59-year-old registered nurse.

3.5.3 Provision of sexual counseling services in schools

Schools provide spaces such as the 'To Be Number One' club room and the school nurse's room to offer sexual counseling to students.

"The friendly service center is located in the health room, particularly for issues related to pregnancy. There are also teachers responsible for this issue who collaborate with the hospital network regarding pregnancy. They provide counseling when students encounter issues related to this topic." A 48-year-old deputy school director, academic affairs division.

However, the majority of adolescent students reported that they had never sought such services provided by the school, as they were unaware of their availability and unfamiliar with the teachers. Only a small proportion of students had utilized such services.

"I only recently learned about the 'To Be Number One' club. Prior to that, I had no knowledge that there was a counseling center available. I only became aware of it recently." A 16-year-old male student.

3.5.4 Availability of trusted counselors

Trusted individuals, such as close friends, romantic partners, older siblings, and mothers, are those with whom adolescent students feel comfortable discussing sexual matters. Among these, friends are the most commonly chosen individuals for consultation, as they are of the same age, trusted, and easy to talk to without fear of being scolded, and they interact with each other daily.

"A close friend is considered the most trusted advisor, as I believe that talking to a friend may avoid being scolded, whereas conversing with an adult may lead to being lectured or reprimanded." An 18-year-old female student.

"I would ask my older sister first, as she is much older and has a more modern perspective. She is, therefore, someone I can relate to, so I would turn to her as the first person to ask." A 16-year-old female student.

3.6 Fostering leadership and networks dedicated to adolescent pregnancy prevention

This initiative involves the creation of leaders to advocate for pregnancy prevention among adolescents, raise awareness about available health services, and enhance access to health services for pregnancy prevention, including:

3.6.1 Establishing adolescent leaders to promote pregnancy prevention

Health service units, local administrative organizations, and relevant agencies have established adolescent leaders through training programs. Moreover, adolescents who have previously utilized clinic services have been empowered to become advocates and are tasked with sharing pregnancy prevention methods and health service resources, as well as encouraging their peers to access pregnancy prevention services.

"When two students walked into the clinic, we told them, 'I will make you the leaders.' Then, we instructed them to invite their friends to receive contraceptive implants and to direct their friends to visit the clinic, and these two students then expanded the initiative by reaching out to many other friends. This is how we create adolescent leaders." A 56-year-old registered nurse

3.6.2 Creating a village health volunteer (VHV) network to prevent and address adolescent pregnancy issues

Health service units organize training programs and establish VHV networks in local areas to monitor, observe, and provide guidance to at-risk adolescents, encouraging them to access healthcare services for pregnancy prevention.

"We implemented a project with the VHV group, which is a group easily accessible to adolescents. We provided training for the VHVs on topics such as violence, sexual abuse, the law, and access to contraception for preventing unplanned pregnancies in adolescents. The VHVs were then instructed to observe and identify at-risk adolescents and advise them to seek contraceptive implants." A 56-year-old registered nurse.

3.7 Strengthening intersectoral coordination with relevant agencies and organizations

Local administrative organizations, health service units, non-profit organizations, and schools have collaborated and supported each other in organizing activities to prevent adolescent pregnancies. This includes financial support for the projects/activities from local administrative organizations, co-presenting as trainers, and providing materials for activities such as condoms, promotional banners, educational media, and sex toys, among others.

"These condoms are provided by the NGOs. When we run out, I call them, and they send more. We request the specific type, size, and quantity. We make the request directly, and they provide them without requiring us to submit a formal written request. We simply make the verbal request, and they supply us with what we need." A 57-year-old advisor of the To Be Number One club.

4. DISCUSSION

The results demonstrated that strategies to promote health literacy about pregnancy prevention among adolescent students require collaboration and support from multiple stakeholders, including adolescents themselves, families, peers, schools, health service units, and relevant agencies. These strategies comprise seven key approaches: (1) enhancing knowledge about sexuality, pregnancy prevention, and related topics; (2) raising awareness of pregnancy prevention; (3) developing essential skills for pregnancy prevention; (4) promoting access to health services and contraceptive methods; (5) establishing peer leaders and networks for adolescent pregnancy prevention; (6) fostering collaboration with relevant agencies and organizations; and (7) providing safe zones for discussion and counseling on sexuality and pregnancy prevention.

Based on the strategies aimed at enhancing knowledge regarding sexuality, pregnancy prevention, and related topics, as well as strategies to raise awareness of pregnancy prevention, the findings reflect that the school currently provides sexuality education in the curriculum. However, the existing course content and teaching methods do not translate effectively into practical behaviors in daily life, particularly concerning the efficient use of contraceptive methods, and they remain insufficient in meeting the needs of adolescents. This is evidenced by the fact that most adolescent students tend to seek information on sexuality and pregnancy prevention from the internet or social media, where there is both accurate and inaccurate information. If adolescents follow such information without critically evaluating its credibility, it may lead to negative consequences. At the same time, educators themselves reflect a lack of confidence in their knowledge and communication on sexual topics. They also tend to assume that students already possess sufficient knowledge in these areas, resulting in a lack of detailed and in-depth instruction.

According to those limitations, it is recommended that schools revise and enhance the content of sex education courses to provide more detailed and explicit information, particularly regarding contraceptive methods (Pivongkomjhon, 2020). Media literacy among adolescent students should also be promoted, enabling them to critically evaluate information. Teacher competencies should be strengthened, building their confidence to effectively deliver sexual education content. Furthermore, it is essential to use diverse teaching approaches that allow adolescents to apply acquired knowledge in daily life, such as interactive classrooms and peer education programs. Such improvements would contribute to more effective sex education instruction, ensuring that adolescents have accurate beliefs and understanding regarding sexuality and are better equipped to prevent adolescent pregnancies (Thelma et al., 2024).

Moreover, the findings indicate that promoting health literacy for pregnancy prevention among adolescent students requires not only school-based strategies but also collaboration with external networks, such as local government agencies, healthcare service units, and non-profit organizations. Establishing collaborative partnerships is a key element in driving strategies to enhance health literacy for pregnancy prevention among adolescent students. This is consistent with previous

studies, which have found that building networks for the prevention and resolution of adolescent pregnancy issues can support improved health literacy, decision-making, and preventive behaviors regarding pregnancy among students (Khumthong et al., 2022).

The study results highlighted that collaboration between schools and relevant agencies or organizations is a crucial strategy for supporting other initiatives aimed at promoting health literacy for pregnancy prevention among adolescent students. Such collaboration facilitates the development of essential skills for pregnancy prevention, improves access to healthcare services and contraceptive methods, supports the establishment of peer leaders and adolescent pregnancy prevention networks, and provides safe zones for discussion and counseling about sexuality and pregnancy prevention. However, the implementation of these strategies in schools still faces limitations that need to be addressed or further developed by both schools and their partner networks, as follows.

Regarding the strategy of developing essential skills for pregnancy prevention, the study found that adolescents have unequal opportunities to participate in skill development activities or programs, resulting in some students not acquiring the necessary skills. Therefore, it is important to ensure equitable and comprehensive access for all students to participate in skill development programs, particularly those related to sexuality, so that adolescents can gain the competencies needed for pregnancy prevention. This is consistent with previous studies, which have shown that possessing essential skills enables adolescents to effectively and safely prevent pregnancy (Wong, 2021; Austrian et al., 2020).

In terms of the strategy to promote access to health services and contraceptive methods, this study found that while schools currently provide counseling services and condom distribution to prevent pregnancy, the dissemination of information about these services is still insufficient. Accordingly, it is necessary to disseminate information regarding the availability of school-based health services, as well as those provided by partner networks, to enhance students' access to health services and contraceptive devices. This is consistent with previous studies' reports that access to information, education, and health services is essential in promoting sexual and reproductive health and rights among adolescents (Ngilangwa et al., 2016) and that adolescents with better access to information are less likely to engage in risky sexual behaviors (Muhlisa et al., 2024).

Concerning the strategy of establishing peer leaders and networks for adolescent pregnancy prevention, participants indicated that the current implementation of student peer leader development in schools lacks continuity. Consequently, it is recommended that schools formulate and implement a systematic and ongoing plan to develop and support adolescent peer leaders for pregnancy prevention. This approach aligns with previous studies, which have found that strategic planning for adolescent pregnancy prevention—coupled with ongoing monitoring and systematic problem-solving—can effectively reduce adolescent pregnancy rates (Pivongkomjhon, 2020).

Regarding the strategy of providing safe zones for discussions and counseling on sexuality and pregnancy prevention, although counseling services are available within the school system, most students have not accessed these services. The main reason cited is a lack of trust and reluctance to disclose personal sexual information or experiences to teachers or counselors. Hence, it is crucial to increase awareness and emphasize the importance of maintaining confidentiality among all personnel involved in providing sexual counseling services, both within the school system and its partner networks. The previous studies have shown that when service providers are adolescent-friendly, maintain confidentiality, and have a positive attitude towards adolescents, barriers to accessing sexual and reproductive health information and services are greatly reduced (Hayrumyan, 2020).

Although schools have established collaborations with relevant agencies and organizations to promote health literacy for pregnancy prevention among adolescent students, the involvement of families in school-based activities to promote adolescent pregnancy prevention remains limited. For this reason, it is recommended to encourage greater family participation. Supporting parents to engage in adolescent pregnancy prevention—particularly through appropriate discussions about sexuality and sexual relationships within the family—can help reduce adolescent pregnancy rates (Pivongkomjhon, 2020).

5. CONCLUSION

Health literacy regarding pregnancy prevention among adolescent students can be effectively developed by engaging the adolescents themselves. However, this process also necessitates the cooperation and support of the broader community, including family, friends, schools, and relevant organizations. The strategies for promoting health literacy in this context are integrated from both the school setting and community sectors. Seven strategies are emerging; enhancing knowledge about sexual health, pregnancy prevention, and related topics, and raising awareness about pregnancy prevention should be the school's response. The next strategies are coordinated between the school and community sectors: developing essential skills for pregnancy prevention, including sexual and life skills; improving access to health services and pregnancy prevention resources; providing safe zones for discussion and counseling on sexual health and pregnancy prevention; fostering leadership and networks for adolescent pregnancy prevention; and coordinating efforts with relevant agencies and organizations to achieve these goals. Based on the study findings, the following recommendations are proposed for future research:

1) The development and evaluation of comprehensive sex education curricula that effectively address pregnancy prevention in ways that are applicable to real-life situations and tailored to the specific needs and sociocultural context of Thai adolescents.

2) Examination of teachers' competencies in delivering sex education, including their knowledge, attitudes, and communication skills, to identify strategies to enhance their confidence and effectiveness in conveying information to students.

3) Investigation of family involvement models that can enhance health literacy related to pregnancy prevention among adolescent students.

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AUTHOR CONTRIBUTIONS

R.T. and P.B. conceived and designed the study. R.T. carried out data collection and processing. R.T. and P.B. analyzed the data, interpreted the results, and validated the findings. R.T. wrote the manuscript in consultation with P.B. Both R.T. and P.B. authors discussed the results and contributed to the final version of the manuscript.

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