

Nurses in University Health Services and their Roles in Sexually Transmitted Infection Prevention, Care, and Education: A Literature Review

บทบาทของพยาบาลในหน่วยบริการสุขภาพของมหาวิทยาลัยต่อการป้องกัน การดูแล และการให้ความรู้เกี่ยวกับโรคติดต่อทางเพศสัมพันธ์ในนักศึกษา: การทบทวนวรรณกรรม

Rachanon Sakol* Kawee Pattarayukoltorn* Phat Prapawichar**

รชานนท์ สากล* กวี ภัทรยุคลธร* พัด ประภาวิชา**

Abstract

Background: The prevalence of sexually transmitted infections (STIs) is increasing globally, with a particularly alarming rise in Thailand, especially among young people. This trend poses significant repercussions for their health, academic performance, and overall quality of life. This integrative literature review endeavors to elucidate the multifaceted roles of university nurses in the realms of prevention, care, and education pertaining to sexual health, tailored to the distinct needs of students. **Methods:** A comprehensive systematic search was executed across PubMed, CINAHL, Scopus, and ThaiJO for scholarly publications-spanning from 2015 and 2025, using the PICO framework. Studies were included if they – concentrated on university health services focusing on prevention, care, and sexual health education for the student population. A total of 13 studies met the inclusion criteria and were analyzed. **Results:** Three major roles of university nurses were identified: (1) prevention strategies that increased service

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* Registered Nurse, Office of Health Welfare and RSU Medical Clinic, Rangsit University, Pathum Thani, Thailand 12000. E-mail: rachanonskl@gmail.com

* พยาบาลวิชาชีพ สำนักงานสวัสดิการสุขภาพ คลินิกเวชกรรม มหาวิทยาลัยรังสิต ปทุมธานี ประเทศไทย 12000. E-mail: rachanonskl@gmail.com

* Corresponding Author, Registered Nurse, Office of Health Welfare and RSU Medical Clinic, Rangsit University, Pathum Thani, Thailand 12000. E-mail: kawee.ptr@gmail.com

* Corresponding Author, พยาบาลวิชาชีพ สำนักงานสวัสดิการสุขภาพ คลินิกเวชกรรม มหาวิทยาลัยรังสิต ปทุมธานี ประเทศไทย 12000. E-mail: kawee.ptr@gmail.com

** Former Dean, Faculty of Nursing Science, Assumption University, Bangkok, Thailand 10240. E-mail: phatprp@au.edu

** อดีตคณบดี คณะพยาบาลศาสตร์ มหาวิทยาลัยอัสสัมชัญ กรุงเทพฯ ประเทศไทย 10240. E-mail: phatprp@au.edu

utilization, though male students were less engaged; (2) educational interventions that improved knowledge, attitudes, condom negotiation skills, and testing practices; and (3) supportive health services that reduced stigma and enhanced accessibility, especially when integrated with mental health and sexual violence care. **Conclusion:** This literature review underscores the efficacy of a nurse-led, student-centered paradigm within university health services. Fundamental components encompass screening, sexual education, provision of condoms, peer support, an inclusive clinic environment, and comprehensive follow-up care. Future research should explore the long-term ramifications, systemic capacity, and cost-effectiveness of these interventions.

Keywords: university nurses, sexually transmitted infections, sexual health education, peer support, inclusive care

บทคัดย่อ

ความชุกของโรคติดต่อทางเพศสัมพันธ์มีแนวโน้มเพิ่มขึ้นทั้งในระดับโลกรวมถึงประเทศไทย โดยเฉพาะในกลุ่มเยาวชน ซึ่งส่งผลกระทบต่อสุขภาพ การเรียนและคุณภาพชีวิต การทบทวนวรรณกรรมเชิงบูรณาการครั้งนี้มีวัตถุประสงค์เพื่อระบุบทบาทของพยาบาลมหาวิทยาลัยในการป้องกัน การดูแล และการให้ความรู้ด้านสุขภาพทางเพศที่ตอบสนองต่อความต้องการของนักศึกษา

วิธีการศึกษา: เป็นการสืบค้นวรรณกรรมเชิงบูรณาการจากฐานข้อมูล PubMed, CINAHL, Scopus และ ThaiJO ครอบคลุมช่วงปี ค.ศ. 2015–2025 โดยใช้กรอบแนวคิด PICO เกณฑ์การคัดเลือกคือ งานวิจัยที่กล่าวถึงบริการสุขภาพของมหาวิทยาลัยที่มุ่งเน้นการป้องกัน การดูแล และการให้ความรู้ด้านสุขภาพทางเพศแก่นักศึกษา ทั้งนี้ พบงานวิจัยที่เข้าเกณฑ์ทั้งหมด 13 เรื่อง ซึ่งได้นำมาวิเคราะห์เชิงเนื้อหา

ผลการศึกษา: พบบทบาทสำคัญของพยาบาลมหาวิทยาลัย 3 ด้าน ได้แก่ 1) กลยุทธ์การป้องกัน: ช่วยเพิ่มการเข้าถึงบริการ แม้ว่ากลุ่มนักศึกษาชายจะยังคงมีส่วนร่วมน้อย 2) การจัดกิจกรรมด้านการศึกษา: ช่วยพัฒนาความรู้ ทักษะการเจรจาต่อรองเรื่องการใช้ถุงยางอนามัย และการเข้ารับการตรวจ 3) บริการเชิงสนับสนุน: จะช่วยลดการตีตราและเพิ่มการเข้าถึงการใช้บริการสุขภาพได้ดียิ่งขึ้น โดยเฉพาะเมื่อมีการเชื่อมโยงกับบริการสุขภาพจิตและการช่วยเหลือผู้ที่เผชิญความรุนแรงทางเพศ

สรุป: การทบทวนวรรณกรรมที่กล่าวมานี้เน้นให้เห็นถึงประสิทธิผลของการจัดบริการสุขภาพในมหาวิทยาลัยที่มีพยาบาลเป็นผู้นำและยึดนักศึกษาเป็นศูนย์กลาง องค์ประกอบพื้นฐานที่สำคัญ ได้แก่ การตรวจคัดกรอง การให้ความรู้เรื่องเพศ การเข้าถึงถุงยางอนามัย การสนับสนุนจากเพื่อน คลินิกที่ครอบคลุม และการติดตามต่อเนื่อง งานวิจัยในอนาคตควรประเมินผลลัพธ์ระยะยาว ศักยภาพของระบบบริการ และความคุ้มค่าเชิงเศรษฐศาสตร์สุขภาพ

คำสำคัญ: พยาบาลมหาวิทยาลัย โรคติดต่อทางเพศสัมพันธ์ เพศวิถีศึกษา การสนับสนุนโดยเพื่อน การดูแลแบบครอบคลุม

Introduction

Sexually transmitted infections (STIs) continue to pose a major problem to the international community given the fact that disease is closely related to risk behaviors involving sexual transmission without condoms and hence, carries a huge burden in terms of morbidity and mortality. A modelling study published in 2020 estimated 25.6 million new infections of genital herpes simplex virus type 2 (HSV-2) and 519.5 million prevalent cases worldwide, genital HSV-1 causing almost 205 million episodes of genital ulcer disease in 2020^{1,2}. STIs in the global context are not limited to viral infections as there are also bacterial agents that cause serious problems. Specifically, *Neisseria gonorrhoeae* has developed a high degree of resistance to first-line antimicrobials, with WHO surveillance data indicating that most parts of the world experience resistance or lower susceptibility of this pathogen to ceftriaxone, cefixime, azithromycin, and ciprofloxacin³. Such increasing antimicrobial resistance is a threat to current treatment regimen as well as to the overall management of STIs. Moreover, the overall health cost of infections like human papillomavirus (HPV) can also be seen in the number of deaths caused due to cancer, cervical cancer being one of the most prevalent types of cancer among women all over the world⁴. The above results indicate the vital necessity of more adequate prevention, broadened access to screening and diagnostics, an ongoing surveillance, and innovations in the field of therapeutics and vaccines.

Over the past decade, the global incidence of common bacterial and viral STIs has also risen steadily⁵. Thailand mirrors this trend. National surveillance shows the STI rate climbing from 28.8 cases per 100,000 population in 2017 to 53.0 cases in 2023⁶. Recent data confirm that syphilis (28.1/100,000) and gonorrhea (17.2/100,000) are the two most frequently reported bacterial STIs, especially among 15–24-year-olds, who show gonorrhea rates as high as 119.3/100,000⁷. Despite this alarming situation, condom use among Thai youth remains low⁸.

University students are at heightened risk for sexually transmitted infections (STIs) because adolescence and young adulthood are characterized by rapid biological, emotional, and social transitions that increase susceptibility to unsafe sexual practices. Limited knowledge, influence by peers, and the emergence of online ports also encourage liaisons that would result to early sex or unprotected sex. Although in Thailand this being at risk is just emerging, recent evidence points in this direction. A cross-sectional survey conducted among 916 undergraduates in eight universities in four regions found out that about half (46.8%) of them were individuals who practice risky sexual behaviors such as inconsistent condom use, multiple partners, and so on⁹. Similarly, a study conducted in Ubon Ratchathani Rajabhat University revealed that 80.8 % of students had been involved in sexual intercourse, 49 % of them had no condom during their first experience and only 36.4 % had been tested in HIV/STI

screenings¹⁰. Additional research among vocational college students in Kalasin confirmed that despite relatively high knowledge levels, preventive behaviors remained only moderate, leaving significant risk for STI transmission¹¹. In a more recent study in the context of higher education institutions conducted among youth men who have sex with men (MSM), it was concluded that the predominant predictors of preventive behavior were partner influence, the easy access to condoms and self-efficacy¹².

Within university settings, university nurses (also termed campus- or college-health nurses) are registered nurses employed by student health services who provide both clinical and preventive care. Their roles include STI screening, sexual-health counseling, immunization, partner notification, and health-promotion initiatives tailored to young adults. Unlike hospital nurses who focus on inpatient care, university nurses integrate clinical expertise with population-level strategies to reduce sexual health risks and support academic success^{10,12}.

Therefore, this integrative review will explore the responsibilities and the practices of university nurses in Thailand concerning the prevention, management, and promotion of sexual health among university students. The available literature has demonstrated that university nurses, also known as student/college or campus health nurses, contribute significant roles in STI screening, sexual health counseling, partner notification initiative, vaccination programs, and campus-wide health-promotion activities tailored specifically for students in the young adult population. In Thailand, interventions based on nurse education interventions have been found to provide an improvement in partner notifications among women with STIs, while other studies have established the role of nurses in peer-delivered sexual health education and web-based prevention strategies.

Despite this body of evidence, research focusing on the specific roles and contributions of university nurses remains limited. In particular, little is known about how university nurses address the prevention, care, and education of sexual health in ways that respond to the unique needs of students. This gap underscores the necessity for further investigation to clarify and strengthen the role of university nurses in promoting student sexual health. This integrative literature review aimed 1) to identify existing interventions and services led or coordinated by university nurses. 2) to examine the barriers and facilitators influencing their practice in campus health settings 3) to highlight critical knowledge gaps that require further empirical investigation.

Methods of the Review

Search Strategy

A systematic literature search was conducted to identify relevant studies regarding the roles of university nurses in the prevention, management, and education pertaining to sexually transmitted infections (STIs). Four electronic databases including PubMed, CINAHL, Scopus, and Thai Journals Online (ThaiJO) were meticulously searched for publications released between January 2015 and March 2025. The search strategy combined keywords related to “university nurses,” “sexual health education,” “sexually transmitted infections,” “peer support,” and “inclusive care.”. Filters for free full text, and associated data were rigorously applied. Relevant articles in both English and Thai language were considered, guided by the PICO framework (Population, Intervention, Comparison, Outcome).

The initial inquiry utilizing the keyword “university nurse” yielded a total of 14,317 scholarly articles. The incorporation of “sexual health education” effectively diminished the results to 199, while the further inclusion of “sexually transmitted infections” meticulously refined the count to 13. Subsequent to the application of eligibility criteria, these 13 studies were deemed suitable for inclusion in the review.

Inclusion Criteria

Studies were considered eligible if they were published between 2015 and 2025 in either English or Thai, conducted within university or higher-education contexts, and focused on students aged 18–29 years. Eligible research was required to describe nurse-led or nurse-supported interventions relating to sexual health promotion, STI prevention, screening, education, or supportive care. Inclusion also mandated the reporting of at least one relevant outcome, such as STI incidence or prevalence, condom utilization, uptake of STI testing or vaccination, sexual health knowledge, attitudes, or self-efficacy, or factors influencing service utilization. Studies employing quantitative, qualitative, or mixed-methods approaches were accepted.

Exclusion Criteria

Studies were excluded if they addressed sexual health without the involvement of nurses professionals, were conducted outside academic university settings, or encompassed populations beyond students. Additionally, reviews, commentaries, conference abstracts, editorials without original data, publications prior to 2015, and studies that did not report outcomes related to sexual health promotion, STI prevention, or the roles of nursing.

Quality Assessment

The methodological rigor of the studies included in this review was meticulously assessed based on criteria such as the clarity of study design, sampling methodologies, validity of measurements, and potential biases. While studies were not excluded solely on the grounds of quality, this evaluation informed the interpretation of the findings. A total of 13 studies fulfilled the inclusion criteria and were subjected to analysis in this review.

Data Synthesis

Given the heterogeneity of study designs and outcomes, a narrative synthesis approach was employed: Thematic analysis was utilized to extract findings and inductively categories them into overarching domains that encapsulate the roles of university nurses in sexual health promotion, prevention, care, and education.

Findings

1. The key roles of University Nurses

The review delineated a plethora nurse-led functions, which were meticulously categorized into four principal domains.

1.1 **Screening:** Routine and mobile STI testing, partner notification, and follow-up services.

1.2 **Prevention:** Condom distribution, health promotion initiatives, and digital interventions aimed at enhancing sexual health behaviors.

1.3 **Education:** Engaging classroom sessions, peer-led programs, and simulation-based workshops.

1.4 **Supportive Health Services:** Counseling, inclusive and culturally sensitive care, tele-health services, and referral pathways for additional assistance.

2. Process

The findings process revealed four broad thematic categories: Screening^{13,14}, Prevention Strategies¹⁵⁻¹⁷, Education Interventions¹⁸⁻²¹, and Supportive Health Services Interventions²²⁻²⁵, which were used to structure the findings below.

2.1 Screening Sexually transmitted infection (STI) and human immunodeficiency virus (HIV) testing on university campuses constitutes a pivotal component in mitigating the alarming prevalence of STIs among young adults. Institutions of higher learning bear a responsibility for the health and safety of their students; thus, they should not only provide but also actively promote comprehensive sexual health solutions¹³.

There are several barriers that hinders students from obtaining STI/HIV screening. These include the inability to easily access screening opportunities, scheduling conflicts,

lengthy wait periods, feeling of humiliation, perceived stigma, and financial concerns. Furthermore, a perceived lack of risk exists because many STIs are asymptomatic, which further reduces testing rates among students. Confidentiality concerns are a significant barrier, particularly in relation insurance invoicing, which may result in the inadvertent disclosure of information to parents. This factor deters a considerable proportion of adolescents and young adults from seeking care¹³.

To address these challenges, university health services have established specialized sexual health clinics (SHCs) and nurse-led STI screening facilities. In addition to rendering testing more accessible, alleviating stress, and fostering a nonjudgmental atmosphere, these initiatives will serve to humanize the process and challenge its normalization. Off-site clinics operated by nurses have been demonstrated to be an evidence-based approach that enhances STI testing rates by 33% and HIV screening rates by 24%. High-risk students, including Black students, those with multiple sexual partners, young men who engage in sexual activities with other men (YMSM), and individuals who infrequently utilize protective measures, can be effectively targeted and engaged by these clinics. An impressive 95–98% of attendees express satisfaction with the services provided, attributing their contentment primarily to the staff's approach ability and the convenience of the offerings^{13,14}.

Similarly, free-standing sexual health clinics (SHCs) have demonstrated distinct advantages over primary care facilities, offering a broader array of STI screening options and exhibiting higher percentages of positive test results for gonorrhea and chlamydia infections. These clinics also reveal a marked difference in the demographics of their patient populations, with younger females and Black individuals exhibiting elevated screening rates, alongside an influx of male patients who may be less inclined to utilize the available preventive health services. Given that infections cannot be solely diagnosed through genital screening, it is imperative to conduct extragenital screenings for men who have sex with men (MSM). Consequently, it is anticipated that health centers will adopt this approach when engaging with MSM. The efficacy of SHCs can be attributed to an enhanced emphasis on comprehensive and individualized sexual history assessments conducted by trained professionals, coupled with free and confidential STI screening and on-site treatment^{13,14}.

Screening procedures are informed by standardized testing and treatment protocols established by agencies such as the USPSTF and CDC. Effectively targeting appropriate testing and counseling necessitates a thorough risk assessment, exemplified by the CDC's "Five P's approach" (partners, practices, prevention of pregnancy, protection against STIs, and history of STIs). Despite notable accomplishments, continuous evaluation is recommended to enhance communication strategies, address the escalating issue of insurance billing opacity, ensure

adequate staffing, and integrate more robust risk reduction health education initiatives to optimize efficacy.

2.2 Prevention Strategies Three recent studies emphasize the pivotal role of nurses in formulating strategies to mitigate the incidence of sexually transmitted infections (STIs), particularly among adolescents and young adults. A quasi-experimental research study conducted in Thailand, which evaluated the impact of nurse-facilitated, adolescent-centered social media interventions for HIV prevention, revealed a compelling insight. The findings indicated substantial enhancements in participants' behavioral intentions and their perceptions regarding the efficacy of preventive measures. Notably, the involvement of nurses as facilitators enhanced peer leadership within the programs and promoted safe sex behaviors and condom negotiation, attributable to their perceived legitimacy within the initiatives. This emphasized the potential to influence the sexual health behaviors of young people by integrating nursing expertise with digital platforms. Recent surveys have demonstrated that school-based instruction is exceedingly beneficial, ranking just below digital interventions¹⁵. A Japanese assessment revealed that 70% of school nurses incorporated STI prevention into their curricula; however, the majority relied on outdated or generic teaching materials, which diminished the effectiveness of their instruction. Nurses identified a pronounced necessity for a categorized digital resource addressing sensitive topics such as sexual violence, HPV prevention, and media literacy education. These findings illustrate that the educational capabilities of nurses can be significantly enhanced by providing them with contemporary and accessible learning resources, thereby augmenting STI prevention efforts within school and university settings¹⁶.

As opposed to nurse-led education, peer education has emerged as a compelling strategy in the Mekong region. A scoping review encompassing Thailand, Vietnam, Myanmar, Cambodia, and Lao PDR revealed that markedly enhanced knowledge, attitudes, and behavioral prevention specifically regarding condom use were observed following peer education interventions. Programs not only empowered young peer educators but also fostered dialogue on previously taboo subjects, resulting in enduring shifts in sexual health norms. The involvement of nurses in the training and oversight of peer educators significantly elevated the quality of the program and facilitated a more seamless integration with health services. Collaborations between nurses and peers represent a scalable and culturally adaptable intervention strategy for the prevention of sexually transmitted infections¹⁷.

2.3 Education Interventions One of the most crucial instruments in the arsenal for mitigating sexually transmitted infections (STIs) among the upcoming generation of youth is education. A high prevalence of STIs, coupled with reckless sexual conduct, can stem from an absence of comprehensive sexual health education; conversely, elevated levels of

knowledge foster positive attitudes and the responsible management of sexual health behaviors^{18,19}. Numerous pedagogical methodologies have proven effective in elevating awareness and cultivating more favorable attitudes toward STI prevention. A study conducted among Nigerian undergraduate nursing students revealed that an astonishing 99.4% of participants possessed extensive knowledge about STIs, primarily acquired through lectures and academic coursework, and harbored positive perceptions regarding preventive measures. These encompassed an understanding of the efficacy of condoms and the various transmission routes, including oral sex¹⁸.

Similarly, an intervention employing interactive online modules to enhance medical students' comprehension of HIV and STI prevention, encompassing pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), proved to be efficacious. Initially, 30.9% of students expressed a lack of confidence in identifying candidates for PrEP or PEP; however, this figure surged to 91% post-intervention. Furthermore, the mean score pertaining to knowledge of HIV and STI screening and prevention escalated to 8.0. This signified the elevated effectiveness of the intervention¹⁹.

Additionally promising are the unconventional mobile health (mHealth) interventions. A nurse-led interactive instant messaging (IM) initiative utilizing WhatsApp has demonstrated a beneficial impact on emerging adults in Hong Kong by promoting safer sexual behaviors. Following an intervention grounded in the Information-Motivation-Behavioral Skills (IMB) model, participants exhibited significantly enhanced attitudes and knowledge regarding condom utilization. When addressing sensitive sexual health topics, participants conveyed considerable satisfaction with the IM chats, appreciating the immediacy, confidentiality, and personalized nature of the communication. Furthermore, a series of follow-up messages fostered ongoing engagement and reinforced comprehension²⁰.

There remains a conspicuous disconnect between heightened awareness and the requisite preventative measures, despite significant advancements in attitudes and knowledge concerning diabetes prevention. For instance, research revealed that although nursing school students in Nigeria demonstrated commendable scores on assessments of knowledge and positive attitudes, there existed no statistically significant correlation between their personal histories of sexually transmitted infections (STIs) and their understanding of STI prevention, indicating a failure to translate that knowledge into practice. Similarly, notwithstanding the enhancement of attitudes and knowledge, the Hong Kong IM intervention did not yield a significant increase in the consistency of condom usage. This incongruity underscores the necessity for comprehensive educational initiatives aimed at dismantling the barriers to routine screening and the reliable application of condom use²⁰.

Essential educational interventions constitute a vital strategy in nations where the management of sexually transmitted infections (STIs) is impeded by a pervasive lack of awareness, detrimental attitudes, cultural disparities, and entrenched misconceptions. Healthcare professionals in South Africa have discerned that young women frequently encounter formidable barriers in accessing STI treatments, primarily due to the stigma associated with these conditions and an acute fear of judgment, exacerbated by inadequate knowledge regarding STI symptoms and safe sexual practices. They emphasized two pivotal strategies: enhancing public education on STI symptoms and advocating for the correct utilization of self-sampling kits. These insights illuminate the imperative for the formulation of comprehensive educational and awareness campaigns aimed at dismantling these barriers.

Therefore, it is imperative to advocate for continuous education and support to enhance understanding and foster a more proactive approach to sexual health, particularly among the forthcoming generation of medical professionals. The early incorporation of this training into medical curricula, accompanied by ongoing reinforcement of the material, is vital for ensuring that healthcare practitioners grasp and feel confident when addressing sexual health matters with diverse populations. The accessibility and efficacy of STI services could be substantially augmented by broadening the implementation of digital health interventions and eHealth solutions, including the transition to disseminating STI diagnostic results via email or SMS, especially in low- and middle-income countries (LMICs)²¹.

2.4 Supportive Health Services Particularly within university health facilities, supportive services such as counseling are indispensable for enhancing the efficacy, acceptability, and accessibility of STI prevention, care, and education. Students encounter considerable barriers to access, including feelings of humiliation, apprehension regarding judgment, and a lack of awareness about available resources for assistance. These challenges can be mitigated by utilizing these services to cultivate supportive, nonjudgmental, and nondiscriminatory environments. Historically, public health clinics have provided discreet care to mitigate the stigma associated with STI interventions²².

Their objectives were to facilitate timely diagnosis, provide immediate treatment, and foster collaboration with various agencies to deliver a holistic care strategy. The organizational paradigm of quality healthcare, as articulated by the Institute of Medicine, encompasses the principle of patient-centeredness, which ensures confidentiality, prioritizes vulnerable populations, cultivates a positive and inclusive environment characterized by cultural sensitivity, establishes seamless referral pathways, and promotes comprehensive information and education²².

One of the principal advantages of supportive services is their capacity to enhance the rapport between students and healthcare providers. Students hold in high regard

health professionals who are personable, knowledgeable, and dependable, especially when addressing sensitive topics related to sexual health. Many students seek out these services to acquire the skills necessary to discuss, accept, and elevate their sexual well-being. To foster an environment conducive to disclosing their identities and sexual preferences, LGBTQIA+ students, in particular, should pursue LGBTQIA+-affirmative services and practitioners proficient in transgender health matters. Research indicates that sexual and gender minority college students frequently encounter discomfort when revealing their identities, a lack of awareness regarding available services, and anxiety stemming from microaggressions (such as being misgendered), which collectively contribute to a delayed engagement with healthcare. They may be deterred from seeking essential care due to apprehensions about discrimination and an inability to obtain appropriate support. Similar obstacles have been identified among domestic and international students hailing from abroad, where culturally sensitive and responsive care is imperative. These challenges encompass perceived racism, language barriers, and cultural concerns, including the fear of familial discovery and anxieties regarding confidentiality^{23, 24}.

In the domain of collegiate health, innovative methodologies for delivering supportive services have exhibited considerable promise. Nurse-led consultations were instituted as a quality improvement initiative entitled "SHED Light!" This initiative encompasses a comprehensive care checklist alongside a discussion facilitation tool. The implementation of this approach engendered a remarkable 2.7-fold increase in utilization among sexual and gender minority students, coupled with a significant enhancement in student comfort ratings, which ascended to a project mean of 4.62 on a Likert scale (1–5), markedly exceeding the established baseline of 3.53. These interventions have profoundly contributed to the augmentation of sexual health services accessible to all students. The utilization of the tool fostered the creation of an inclusive and supportive clinical environment wherein students could articulate their needs without the imperative of overt verbal disclosure. Nurse-led consultations were met with enthusiastic acceptance, cultivating the ethos of inclusive care and elevating the visibility of clinic services through strategic marketing endeavors. Furthermore, a steadfast commitment to health justice was reinforced by the collaborative efforts of a multidisciplinary team, comprising clinic staff, student leadership, and administrators from student affairs on the university campus. Given that initial outcomes may reflect disparities in care services, it is imperative for clinicians to engage in continuous education to address implicit bias, thereby ensuring the delivery of equitable care.

A significant advancement in the provision of supportive STI prevention and care, particularly for individuals impacted by health inequities, is the advent of telehealth services. By dismantling geographic and transportation barriers, tele-health enhances

convenience and flexibility, potentially diminishing no-show rates and extending access to historically under-served populations. By delivering services at the patient's convenience in a remote setting, tele-health also alleviates feelings of anxiety and stigma associated with sensitive medical issues. Illustrative examples include text message reminders for infectious disease management, multimedia educational resources tailored to varying literacy and language proficiencies, and the option for home-based STI testing. For instance, women of color and transgender adolescents have reported enhanced access to services and diminished stigma owing to the thoughtful design of tele-health initiatives. Nevertheless, the digital divide—characterized by unequal access to reliable internet and appropriate devices—poses a significant challenge, particularly for the elderly, rural communities, racial and ethnic minorities, and individuals of lower socioeconomic status. The efficacy of tele-health necessitates meticulous consideration of each patient's unique characteristics, encompassing linguistic and cultural responsiveness, as well as the promotion of digital literacy to prevent the exacerbation of health disparities²⁵.

Overall, supportive services within university health settings encompass a myriad of strategies, ranging from cultivating trusting provider-patient relationships and delivering culturally competent in-person care to harnessing innovative technologies such as telehealth. These services are indispensable for fulfilling universities' commitments to fostering student health and well-being, thereby contributing to the fundamental objectives of Sexual and Reproductive Health-related policy and strategy by addressing the diverse and often unique needs of the student population.

3. Outcomes of Nurse-Led Interventions

The included studies elucidated a myriad of favorable outcomes associated with nurse-led interventions, encompassing: augmented sexual health awareness, enhanced attitudes and competencies pertaining to condom negotiation and safer-sex practices, increased engagement in STI testing and vaccination, and diminished stigma, culminating in improved accessibility to sexual health services.

Conclusion

This integrative analysis underscores the pivotal role that university nurses fulfill in advancing students' sexual health through the triad of prevention, education, and supportive care. Research has substantiated that nurse-led initiatives significantly enhance student engagement in STI screening, elevate comprehension of sexual health issues, and mitigate the stigma associated with the use of condoms and other preventive measures. Despite these promising outcomes, notable gaps persist. There is a paucity of data regarding the longevity of the interventions' effects, with risky behaviors often resurfacing in the absence of ongoing

oversight or guidance. Moreover, gender disparities in service utilization are evident, as male students tend to engage with these services less frequently. Additionally, there exists a scarcity of locally focused research that accounts for Thailand's unique resources and cultural context. Systematic assessments of intersectional and systemic accessibility are infrequently conducted, and the design of inclusive care models for LGBTQ+ and international students remains insufficiently scrutinized. While the roles of university nurses have been extensively documented in an international context, evidence within Thailand remains limited.

Gaps in Literature:

1) Durability of Impact: Predominantly brief follow-ups and narrative syntheses; scant evaluations spanning 12–24 months or clinical outcomes (e.g., STI incidence, sustained condom utilization/testing).

2) Equity and Reach: Insufficient engagement among male students and a dearth of subgroup evidence for LGBTQ+ and international students impede equity-focused assessment.

3) Contextual Fit for Thailand/LMICs: Numerous interventions are adapted from high-income contexts, with ambiguous cultural and systemic transferability to Thai universities.

4) System-Level Constraints: Workload, protocol adherence, organizational readiness, and cost-effectiveness are seldom evaluated utilizing structured implementation frameworks.

5) Inclusive Care Outcomes: Connections to mental health, gender-based violence support, tele-health, and partner services lack rigorous outcome evaluation.

6) Methodological Rigor: Small or convenience samples, inadequate comparators, heterogeneous measures, limited preregistration, and incomplete risk-of-bias reporting persist.

Implications for Practice and Policy:

To enhance STI prevention in university health services, nurse-led models should integrate accessible, low-barrier STI screening with immediate results and treatment options, leverage telehealth for flexible access, provide long-term support and follow-up, and offer engaging peer education programs. Addressing stigma requires bilingual materials, inclusive services for LGBTQ+ individuals, flexible hours, and anonymous communication methods like encrypted messaging, which can prevent care loss and encourage ongoing engagement with health services.

The provided text outlines a comprehensive policy framework for improving student sexual health on college campuses by establishing minimum requirements, integrating clinical practices like screening and telehealth, ensuring access to care, supporting nurse-led services and peer programs, and implementing standing orders for treatment and pre-exposure prophylaxis initiation. It also emphasizes the need for standardized data collection and

reporting to connect campus dashboards with national surveillance, as well as joint procurement, public health compacts, and digital privacy audits to ensure consistency, accountability, and scalability of sexual health services, ultimately aiming for measurable and equitable improvements in student sexual health and national STI control.

Collectively, these recommendations provide a strategic foundation for developing equitable, evidence-informed, and sustainable sexual health service models within Thai university settings, with the potential to enhance student health outcomes and reinforce national efforts in STI prevention and control.

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