ปัจจัยที่มีอิทธิพลต่อพฤติกรรมการป้องกันการติดเชื้อเอชไอวี ของผู้ต้องขังชายในเรือนจำที่มีเพศสัมพันธ์กับชาย
Factors Influencing HIV Preventive Behaviors Among Male Prisoners Who Have Sex with Men

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาพฤติกรรมการป้องกันการติดเชื้อเอชไอวีของผู้ต้องขังชายที่มีเพศสัมพันธ์กับชายและปัจจัยที่มีอิทธิพลต่อพฤติกรรมการป้องกันการติดเชื้อเอชไอวี **วิธีการศึกษา:** การศึกษานี้เป็นการวิจัยแบบหาความสัมพันธ์เชิงทำนายมีกลุ่มตัวอย่างเป็นผู้ต้องขังชายที่มีเพศสัมพันธ์กับชาย เรือนจำแห่งหนึ่งกรุงเทพมหานคร จำนวน 189 ราย ที่ได้มาจากการสุ่มแบบลูกโซ่ เก็บข้อมูลระหว่างเดือนสิงหาคม ถึงเดือนกันยายน พ.ศ. 2567 โดยใช้แบบสอบถามที่กลุ่มตัวอย่างตอบเอง ได้แก่การรับรู้ประโยชน์ของการป้องกันการติดเชื้อเอชไอวี การรับรู้โอกาสเสี่ยงต่อการติดเชื้อเอชไอวี การรับรู้อุปสรรคต่อการป้องกันการติดเชื้อเอชไอวี การรับรู้ความสามารถตนเองต่อการป้องกันการติดเชื้อเอชไอวี อิทธิพลของคู่นอน ความรู้เกี่ยวกับการป้องกันการติดเชื้อเอชไอวี และพฤติกรรมการป้องกันการติดเชื้อเอชไอวี การวิเคราะห์ข้อมูลใช้สถิติพรรณนาและการวิเคราะห์ถดถอยพหุคูณแบบขั้นตอน **ผลการศึกษา:** พฤติกรรมการป้องกันการติดเชื้อเอชไอวีของผู้ต้องขังชายที่มีเพศสัมพันธ์กับชายภาพรวมอยู่ในระดับสูงเมื่อพิจารณารายด้าน พบว่า พฤติกรรมการป้องกันการติดเชื้อเอชไอวีด้านการดำเนินชีวิตประจำวัน และด้านการมีเพศสัมพันธ์ในเรือนจำ ในระดับสูง โดยปัจจัยอิทธิพลของคู่นอน (b = 0.261) ความรู้เกี่ยวกับการป้องกันการติดเชื้อเอชไอวี (b = 0.236) บทบาททางเพศสัมพันธ์ (b = 0.128) การรับรู้อุปสรรคต่อการป้องกันการติดเชื้อเอชไอวี (b = -0.234) และการรับรู้โอกาสเสี่ยงต่อการติดเชื้อเอชไอวี (b = 0.160) สามารถร่วมทำนายพฤติ*กรรมการป้องกันการติดเชื้อเอชไอวีของผู้ต้องขังชายที่มีเพศสัมพันธ์กับชายได้ร้อยละ 32 (R^2 = .320, p = <.001) **สรุป:** ผลการวิจัยนี้แสดงให้เห็นว่าผู้บริหาร บุคลากรทางการแพทย์ และเจ้าหน้าที่ที่เกี่ยวข้องกับผู้ต้องขังควรมีกิจกรรมที่ส่งเสริมให้ผู้ต้องขังไม่มีการคล้อยตามคู่นอนในพฤติกรรมเสี่ยงต่อการติดเชื้อเอชไอวี เพื่อเป็นการส่งเสริมพฤติกรรมการป้องกันการติดเชื้อเอชไอวีในกลุ่มผู้ต้องขังชายที่มีเพศสัมพันธ์กับชายในเรือนจำโดยสามารถนำข้อมูลพัฒนาเป็นโปรแกรมที่มีการส่งเสริมความรู้เกี่ยวกับการป้องกันการติดเชื้อเอชไอวี ลดอุปสรรคต่อการป้องการการติดเชื้อเอชไอวี ร่วมกับการสนับสนุนอุปกรณ์ป้องกันการติดเชื้อเอชไอวีอย่างเพียงพอ

คำสำคัญ: ผู้ต้องขังชายที่มีเพศสัมพันธ์กับชาย, แบบแผนความเชื่อด้านสุขภาพ, โรคติดเชื้อเอชไอวี, ชาวไทย

Abstract

Objective: To describe HIV prevention behaviors among male prisoners who have sex with men in prison and to determine factors predicting those behaviors. **Method:** This study is predictive correlational research. Snowball sampling was used to recruit 189 male prisoners who have sex with men in prisons Bangkok. Data collection was carried out from August to September 2024 using self-administered questionnaires The variables assessed included perceived benefits of HIV prevention, perceived susceptibility to HIV infection, perceived barriers to HIV prevention, self-efficacy in HIV prevention, partner influence, knowledge of HIV prevention, and HIV prevention behaviors. Data analysis was conducted using descriptive statistics and stepwise multiple regression. **Results:** The results revealed that the overall of the HIV Prevention behaviors of men prisoners who have sex with men was at a high level. Specifically, behaviors related to daily living and sexual activities within the prison were also reported as high. Factors influencing HIV prevention behaviors included partner influence (b = 0.261), knowledge of HIV prevention (b = 0.236), sexual role (b = 0.128), perceived barriers to HIV prevention (b = -0.234), and perceived susceptibility to HIV infection (b = 0.160). These factors collectively predicted 32% of the variance in HIV prevention behaviors among MSM inmates (R^2 = 0.320, p < .001) **Conclusion:** This study emphasizes the need for targeted HIV prevention programs for male prisoners who have sex with men. Interventions should reduce partner influence, enhance knowledge, address prevention barriers, and promote healthy relationships. Providing adequate prevention resources in prisons is essential. These efforts support sustainable HIV prevention behaviors.

Keywords: HIV, male prisoners , health belief model; Thais

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Introduction

HIV infection has been a substantial health burden in all population groups. The primary transmission routes include sexual intercourse, exposure to infected blood, and the sharing of injection needles. Since the global emergence of HIV, it is currently estimated that approximately 38.4 million people are living with the virus. Of this number, about 10%

reside in Southeast Asia, ranking the region second globally in terms of HIV prevalence by continent.

When categorized by risk group, men who have sex with men (MSM) constitute majority of the infections. In Thailand, over 80% of people living with HIV have access to treatment.[2] Despite the overall decline in HIV incidence, MSM remain the group with the highest infection rate, accounting for 29% of new infections.[3] According to the Department of Disease Control, MSM are considered a high-risk group and require close monitoring and targeted prevention strategies to curb the spread of HIV. [2]

Incarcerated individuals in Thailand have an HIV infection rate of approximately 2.14% which is 2.5 times higher than that observed in the general population.[4] A significant proportion of these cases are concentrated in correctional facilities within the Bangkok Metropolitan region, where 12.35% of all HIV-positive inmates nationwide are located. Notably, Klong Prem Central Prison reports the highest prevalence, accounting for 21.04% of all HIV-positive inmates in the Bangkok.[5] One of the primary behavioral risk factors contributing to the elevated prevalence is unprotected sexual activity between male inmates.[6] Due to the closed and male-only nature of the prison environment, same-sex sexual relations among inmates are relatively common and often occur without protective measures. As a result, men who have sex with men (MSM) within correctional settings constitute a high-risk group for HIV transmission.

Currently, Thailand has implemented policies to address the HIV epidemic, focusing on surveillance in key populations. Among them, incarcerated men who have sex with men are considered a high-risk group requiring close monitoring for HIV prevention. The National Strategy to End AIDS aims to eliminate the HIV problem by 2030[7], with objectives including reducing new infections to fewer than 1,000 cases per year, reducing HIV-related deaths to fewer than 4,000 cases per year, and decreasing stigma and discrimination toward people living with HIV and gender diversity by 90%. To achieve these goals, the strategy introduces an effective service package known as RRTTPR abbreviated for Reach, Recruit, Test, Treat, Prevention, and Retain.

Brief definitions of RRTTPR are as follows: **Reach** as promoting access to services, **Recruit** as encouraging entry into services, **Test** as promoting HIV screening, **Treat** as initiating antiretroviral therapy, **Prevention** as promoting appropriate HIV prevention measures, and **Retain** as ensuring retention in treatment systems. The success indicators for implementation by the year 2025 are defined as 95–95–95. The first 95 indicates that 95% of people living with HIV are aware of their status. The second 95 indicates that 95% of those diagnosed with HIV are receiving antiretroviral therapy. The final 95 indicates that 95% of those receiving treatment have achieved viral suppression. Based on this strategic framework, the Medical Services Division of the Department of Corrections has adopted the RRTTPR approach for the incarcerated population to maximize the effectiveness of efforts to end the AIDS epidemic within the prison system.[8]

Based on the performance outcomes aligned with the success indicators of the National Strategy to End AIDS, the Department of Corrections has adopted these indicators as benchmarks for the success of HIV elimination efforts within the prison system. The results are as follows: for the first 95, the result 100% of inmates are aware of their HIV status; for the second 95, the result is 95.48% of inmates diagnosed with HIV are receiving antiretroviral therapy (ART); and for the third 95, the result is 89.11% of those receiving ART have achieved viral suppression.[4] These results indicate that the target for viral suppression among people living with HIV has not yet been fully achieved. This shortfall is attributable to unprotected sexual behavior and non-adherence to antiretroviral treatment among inmates. Within the prison context, these issues can be addressed through educational initiatives on HIV transmission, raising awareness on prevention, and ensuring widespread access to protective equipment.

For those already infected, providing education on consistent adherence to medication is crucial. Therefore, in the context of HIV prevention in prisons, it is evident that protective behaviors play a vital role both for individuals who are not infected and for those living with HIV. Emphasizing HIV preventive behaviors among the incarcerated population is essential in order to reduce new infections and control the epidemic within correctional settings.

HIV prevention behavior is aimed at maintaining good health while no symptoms of the disease are present.[9] The prevention behaviors refer to actions that prevent HIV transmission, including refraining from any behaviors that could allow the virus to enter the body. These behaviors can

be categorized into three areas namely lifestyle behaviors, sexual behaviors, and substance use behaviors.[10] Currently, research and development in HIV prevention have led to the implementation of the most effective approach known as the Combination Prevention Method. This method involves the use of evidence-based tools and techniques combined with preventive measures tailored to the context of the target population. Combination prevention is classified into three types.[11] The first type is **Biomedical Interventions** which refer to measures that involve biological management of HIV to prevent transmission to uninfected individuals. **Behavioral Interventions**, the second type, refer to strategies to manage individual behaviors to avoid actions that increase the risk of HIV infection. Lastly, **Structural Interventions** refer to factors that support individuals in accessing HIV prevention services.

In this present study, the researchers reviewed relevant literature and applied it to examine HIV prevention behaviors among incarcerated men who have sex with men, in a manner consistent with the prison context. The behaviors were classified into two aspects specifically daily lifestyle and sexual practices. In terms of daily lifestyle, this includes routine activities that may involve exposure to HIV infection without proper precautions, such as contact with the blood or bodily fluids of infected individuals without using protective equipment or sharing sharp objects. As for sexual practices, these involve behaviors that increase the risk of HIV transmission during sexual activity, such as not using protective equipment during intercourse, having multiple sexual partners, and engaging in oral sex.

The role of public health personnel in promoting HIV prevention behaviors is crucial, especially in closed settings such as prisons. HIV prevention requires the presence of 1-protective equipment, 2-preventive measures, and 3-public health personnel. These three factors play a significant role in confined environments. Several studies have shown that the implementation of HIV prevention measures or models such as RRTT(P)R among incarcerated populations helps to promote effective HIV prevention.[12] In addition to implementing measures that support HIV prevention, providing education to inmates can also reduce risky behaviors associated with HIV transmission. It is therefore evident that sexual activity among inmates constitutes same-sex relations within a restricted environment where access to protective equipment is limited. Public health personnel serve as a key mechanism in promoting the adoption of effective HIV prevention behaviors within these settings.

Preventive health behaviors and their related factors, which help explain individual behaviors, are based on the Health Belief Model (HBM) which has been widely used to explain disease prevention behaviors.[13,14] The model posits that an individual's engagement in preventive health behavior depends on the value they place on perceived information. When the HBM is applied alongside a literature review, the influential factors affecting HIV preventive behaviors among incarcerated men who have sex with men can be summarized as follows: Age represents the accumulation of life experiences, which influences decision-making related to specific behaviors.[14] Younger individuals tend to exhibit more risk behaviors for HIV infection compared to older individuals.[15] Knowledge is derived from receiving information or facts, which are accumulated into experience and subsequently influence behavior.[16] Partner influence suggests that an individual's behavior may be shaped by the actions and responses of their partner, which may include praise or punishment. The influence varies according to behavior or situation, and it may support or inhibit certain behavioral expressions.[17,18] Sexual role refers to the role in sexual activity between men, where the individual assuming the assertive (or dominant) role, typically associated with masculine characteristics, may have more influence protective behaviors. Preventive behavior may depend on the role taken during intercourse and is affected by both the situation and sexual desire.[18-20] Perceived benefits of HIV prevention refer to the individual's perception, belief, and understanding of the positive outcomes of engaging in preventive behaviors. When these outcomes are accepted as beneficial, the individual is more likely to practice disease prevention. Perceived susceptibility to HIV infection indicates that an individual recognizes the risk of contracting the disease, which increases the importance they place on engaging in preventive behaviors.[21] Perceived barriers to HIV prevention are the perceived difficulties that hinder individuals from performing preventive behaviors. A high perception of barriers is associated with a lower likelihood of engaging in disease prevention. Perceived severity of HIV infection relates to an individual's belief that the disease is serious. If preventive

behaviors are not adopted, the individual perceives that the consequences may be harmful.[13,14]

According to the aforementioned HIV prevention behaviors, the most effective method is abstinence from sexual activity. However, In the prison context, which is a closed society composed of only one gender, sexual activities among inmates have been reported.[23,24] ref #22 อยู่ตรงไหน When inmates possess same-sex sexual preferences, there is a need for sexual expression, which increases the risk of HIV transmission among the incarcerated population. This is consistent with surveys on risky behaviors for HIV infection among inmates, which revealed partner change and sexual activity during incarceration.[25] From previous literature reviews, there has been very limited research on HIV preventive behaviors among incarcerated men who have sex with men. Moreover, risk behaviors for HIV infection in this group continue to persist. Therefore, the findings from this study can contribute to the development of guidelines or measures for HIV prevention among incarcerated men who have sex with men, and support efforts to end the AIDS epidemic within the prison system. As a result, this study focuses on examining the HIV prevention behaviors among incarcerated men who have sex with men in prisons. The study findings will serve as a foundation for effective prevention approaches in this population and inform future policy planning aimed at ending the AIDS epidemic in correctional settings.

This research applied the theoretical framework based on the Health Belief Model in conjunction with a literature review as the research guideline to explain and study the factors influencing HIV prevention behaviors among incarcerated men who have sex with men. The Health Belief Model explains that individual health behaviors are influenced by one's perception, which serves as an indicator of behavioral performance. Health behavior decisions lead individuals to seek and follow health recommendations to perform disease prevention behaviors. Therefore, any behaviors that individuals exhibit are influenced by the value they place on their perceptions. This conceptual framework includes five components of individual perception namely perceived benefits of behavior, perceived barriers to behavior, perceived severity of the disease, perceived susceptibility to the disease, and perceived self-efficacy in disease prevention. The behaviors that individuals express depend on the awareness and understanding of what they perceive. In addition, there are facilitating factors and other contributing factors such as personal factors, social factors, and cues to action related to perception. The researcher has thus adapted these concepts to the prison context, which forms the basis of the conceptual framework used in this study (Figure 1).

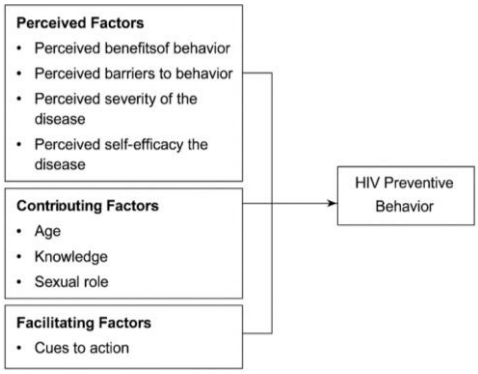

Figure 1 Conceptual framework.

This study aimed to determine HIV preventive behaviors and to examine the predictive power of HBM factors (i.e., perceived benefits of HIV prevention, perceived susceptibility to HIV infection, perceived barriers to HIV prevention, and perceived self-efficacy in HIV prevention), age, knowledge, sexual role, and partner influence on HIV preventive behaviors among incarcerated men who have sex with men. Accordingly, it was hypothesized that age, knowledge about HIV prevention, partner influence, perceived benefits of HIV prevention, perceived susceptibility to HIV infection, perceived barriers to HIV prevention, and perceived self-efficacy in HIV prevention could jointly predict HIV preventive behaviors among incarcerated men who have sex with men.

Methods

This study employed a predictive correlational research design. The population consisted of male inmates in Klong Prem Central Prison who engaged in sexual activities with men, either identifying as homosexual or having had same-sex experiences in prison. The inclusion criteria were male inmates who identified as homosexual or had had sexual intercourse with men, were 20 – 59 years of age, voluntarily consented to participate in the study, did not currently undergo disciplinary proceedings, and were able to

communicate, read, and write in Thai with understanding. Transgender persons were excluded.

The sample size was determined using power analysis with the G* Power 3.1.9.7 program. The test used was Linear Multiple Regression: Fixed Model, R^2 deviation from zero, to identify predictive factors among 8 variables.

Effect size was set at 0.14 from a study by Chonnadang et al[22] which examined factors influencing HIV prevention behaviors among young male inmates and found that the predictive factors accounted for 14% of the variance in HIV prevention behaviors. With type I error of 5% and a power of test at 95%, 171 participants were needed. To compensate for 10% incomplete responses, a total of 189 participants were required.

Measurement instruments

In this study, the research instruments (2nd to 5th, 7th and 8th parts) were authorized for use by Chonnadang et al[22] who studied factors influencing HIV prevention behaviors among young male inmates in a correctional facility. The partner influence instrument (6th part) was authorized for use by Wangluek et al[17] studying factors associated with HIV prevention behaviors among men who have sex with men in Ratchaburi province.

The questionnaire consisted of 8 parts, with details as follows. The **first part** collected demographic and sex-related characteristics including age, education level, sexual role, history of sexual intercourse in prison, duration of imprisonment, history of genital modification in prison, and history of tattooing or body piercing while incarcerated.

Questions in the **second part** assessed **perceived benefits** of HIV prevention. The six items asked about the thoughts, beliefs, and understanding of male inmates regarding the benefits of engaging in HIV preventive behaviors. The response was a 5-point Likert-type scale ranging from 1-stronngly disagree, to 2-disagree, 3-uncertain, 4-agree, and 5-strongly agree. With the possible total score of 6 to 30 points, higher scores indicated a higher level of perceived benefits of HIV prevention. Level of perceived benefits were categorized as low, moderate and high (6 – 14, 15 – 22, and 23 – 30 points, respectively).

The **third part** contained 6 questions assessing **perceived susceptibility to HIV infection**. The 6 questions asked about thoughts, beliefs, or feelings of male inmates regarding their perceived risk of HIV infection while in prison. The response was a 5-point Likert-type rating scale ranging from 1-strongly disagree to 2-disagree, 3-uncertain, 4-agree, and 5-strongly agree. With the possible total score of 6 to 30 points, higher scores indicated higher levels of perceived susceptibility to HIV infection which could be further categorized as low, moderate and high (6 – 14, 15 – 22, and 23 – 30 points, respectively).

In **fourth part**, 12 questions asked about **perceived barriers to HIV prevention** which included thoughts, beliefs, and understanding of male inmates regarding the limitations or difficulties in performing HIV preventive behaviors. The response was a 5-point Likert-type rating scale ranging from 1-strongly disagree to 2-disagree, 3-uncertain, 4-agree, and 5-strongly agree. Scores of positive items were reversed. With the possible total score of 12 to 60 points, higher scores indicated higher levels of perceived barriers to HIV prevention which could be further categorized as low, moderate and high (12 – 28, 29 – 44, and 45 – 60 points, respectively).

Seven questions in **fifth part** assessed **perceived self-efficacy** in HIV preventive behavior specifically the male inmates' confidence in their ability or self-actions to perform HIV preventive behaviors. The response was a 5-point Likert-type rating scale ranging from 1-strongly disagree to 2-disagree, 3-uncertain, 4-agree, and 5-strongly agree. With the possible total score of 7 to 35 points, higher scores indicated higher levels of perceived self-efficacy in HIV prevention which could be further categorized as low, moderate and high (7 – 16, 17 – 25, and 26 – 35 points, respectively).

In the **sixth part**, 5 questions of partner influence which were related to the concepts, statements, persuasion, or behaviors of **sexual partners influence that affect actions toward HIV prevention during sexual intercourse.** There were 2 positively- and 3 negatively worded items. The response was a 5-point Likert-type rating scale ranging from 1-strongly disagree to 2-disagree, 3-uncertain, 4-agree, and 5-strongly agree. Scores of positively worded items were reversed. With the possible total score of 5 to 25 points, higher scores indicated a lower level of partner influence during sexual intercourse and further categorized as low, moderate and high (5 – 11, 12 – 18, and 19 - 25 points, respectively).

The **seventh part** consisted of 21 items assessing knowledge about HIV prevention regarding definitions, causes of the disease, HIV pathophysiology, stages of HIV infection, transmission, treatment, complications, and HIV prevention methods. With a score of 1 point was given for each correct answer, the possible total score was 0 – 21 points where higher scores indicated a higher level of knowledge about HIV prevention. Knowledge levels could be categorized as low (< 60%), moderate (60 – 79.9%) and high (≥ 80%) (The score interpretation criteria are as follows: High level (≥ 80%) (0 – 12, 13 – 16, and 17 – 21 points, respectively).

In the **eighth part**, HIV preventive behaviors were assessed. This section is divided into two parts: daily life and sexual behaviors. The interpretation of HIV preventive behaviors was based on both aspects. Participants with higher scores were considered to have appropriate HIV preventive behaviors.

Daily life behavior: This section contains 6 items related to general practices in prison life, such as sharing sharp objects with others and handling bodily fluids while wearing protective equipment. The questions use a 3 point Likert scale, with a total score ranging from 3 to 18 points. There are both positively and negatively worded items. For positive items, the scale is: regularly practice, sometimes practice, never practice. For negative items, the scale is reversed: never practice, sometimes practice, regularly practice. Higher scores indicate better daily life HIV preventive behavior. The instrument was piloted with 30 individuals with similar characteristics to the study sample, yielding a Cronbach's alpha coefficient of .74

Sexual behavior in prison: This section contains 10 items concerning sexual activity in prison, including condom use during intercourse, proper condom usage, use of appropriate lubricants, and avoiding multiple sexual partners. The questions use a 3point Likert scale, with a total score ranging from 10 to 30 points. There are both positively and negatively worded items. For positive items: regularly practice, sometimes practice, never practice. For negative items: never practice, sometimes practice, regularly practice. Higher scores indicate better sexual HIV preventive behavior in prison. The instrument was piloted with 30 individuals with similar characteristics to the study sample, yielding a Cronbach's alpha coefficient of .95

Research instrument quality assurance

Internal consistent reliability was tested in 30 individuals with characteristics comparable to the participants and found to be acceptable to high for perceived benefits of HIV prevention, perceived susceptibility to HIV infection, perceived barriers to HIV prevention, perceived self-efficacy in HIV preventive behavior, sexual partners influence that affect actions toward HIV prevention during sexual intercourse ss (Cronbach's alpha coefficients of 0.88, 0.85, 0.78, 0.76, 0.75, xxx)

The internal consistency reliability of the seventh part (knowledge about HIV prevention) was high with a KR-20 coefficient of 0.83.

Participant ethical protection

This research was approved by the Human Research Ethics Committee of Burapha University, with the approval code G-HS015/2567 (dated June 12, 2024). Data collection was conducted using a snowball sampling method. Representatives from each prison zone, who identified as men who have sex with men (MSM) and were accepted by their peers, were selected as health volunteers and served as research assistants. Before data collection, these initial representatives received basic training in human research ethics, emphasizing the confidentiality of the study. The objectives, data collection procedures, and participants' rights were clearly explained, including the right to voluntarily participate or withdraw from the study at any time without any impact on their rights as inmates. The questionnaires did not include names or surnames; instead, identification codes were used. All responses were treated as confidential. Completed questionnaires were sealed in opaque envelopes and deposited by participants themselves into a collection box. The research assistants were responsible for collecting and forwarding the responses to the researcher. The data obtained from the questionnaires was used solely for this study. The results were presented in aggregate form, and the data was destroyed after the research findings were published.

Data collection procedure

The researcher obtained permission from the Superintendent of Klong Prem Central Prison, the Director of the Inmate Custody Division, and the heads of each prison zone. After receiving research approval, the

researcher prepared seven research assistants who were prison health volunteers and men who have sex with men (MSM), recognized within each of the seven zones, to serve as initial seeds. These individuals received basic training in research ethics, with an emphasis on maintaining research confidentiality. The researcher explained the study objectives, data collection procedures, snowball sampling process, confidentiality protocols, and procedures for returning the completed questionnaires. The emphasis was placed on upholding participants' rights and ensuring strict confidentiality. During data collection, the seed participants recruited individuals who met the inclusion criteria and explained the study's purpose, confidentiality measures, protection of participant rights, and the voluntary nature of participation, with no negative consequences for refusal. Upon agreeing to participate, the research assistants invited participants to a private, safe, and quiet area free from outside disturbances, creating a relaxed environment conducive to honest responses. Participants completed the questionnaire individually, which took approximately 30–45 minutes. After completing the questionnaire, participants reviewed their answers themselves. The research assistant then provided an opaque envelope for sealing the questionnaire, which participants personally placed in a locked collection box. Participants were also encouraged to refer the next eligible participant. The researcher instructed the research assistants to submit the collected questionnaires to the researcher once per week. The assistants personally delivered the questionnaires from each zone. A total of 189 completed questionnaires were collected, representing a 100% response rate.

Data analysis

The data were analyzed using a statistical software package. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze general information and study variables. To examine the predictive factors of HIV prevention behaviors among incarcerated men who have sex with men, stepwise multiple regression analysis was employed. The significance level was set at .05. Preliminary assumption testing for the use of stepwise multiple regression analysis was conducted and found to be consistent with the statistical assumptions.

Results

The sample group was mostly aged between 31–40 years, with a mean age of 35.11 years (SD = 7.48). More than half had completed secondary education (55.3%). The majority identified as insertive partners (43.4%) and had engaged in sexual activity within the past six months (54.0%). The majority had been incarcerated for 10–20 years, with an average incarceration duration of 20.92 years (SD = 7.48). More than half had a history of drug use (60.3%), and three-fourths of the participants had never undergone penile modification (74.6%). Regarding tattooing or body piercing during incarceration, most had never undergone such procedures (72.5%)

The results of the study showed that the perceived benefits of HIV prevention were at a high level (M = 27.38, SD = 2.83). The perceived susceptibility to HIV infection was also at a high level (M = 22.89, SD = 4.60). Self-efficacy in preventing HIV infection was at a high level (M = 29.20, SD = 2.83). Perceived barriers to HIV prevention were at a moderate level (M = 37.57, SD = 7.48). Partner influence was at a high level (M = 18.84, SD = 3.61). Knowledge about HIV prevention was at a high level (M = 17.64, SD = 2.83)

Overall, HIV preventive behavior was at a high level (M = 39.77, SD = 3.61). When considering HIV preventive behavior by domain, daily life preventive behavior was at a high level (M = 15.25, SD = 2.44), and sexual behavior preventive behavior was also at a high level (M = 24.51, SD = 3.49) (as shown in Table 1)

Table 1 Mean, Standard Deviation, and Interpretation Categorized by HIV Preventive Behavior (n = 189)

HIV Preventive Behavior	Number (persons)	Percentage
HIV Preventive Behavior		
High (37.34 – 48.00 Point)	125	66.1
Moderate (26.67 – 37.33 Point)	64	33.9
Low (16.00 – 26.66 Point)	-	-
M = 39.77, *SD* = 4.96, Min = 28.00, Max = 48.00		
Daily Living		
High (15-18 Point)	125	66.1
Moderate (11-14 Point)	56	29.6
Low (6-10 Point)	8	4.2
M = 15.25, *SD* = 2.44, Min = 8.00, Max = 18.00		
Sexual Activity		
High (23.34 – 30.00 Point)	108	57.1
Moderate (16.67 – 23.33 Point)	80	42.3
Low (10.00 – 16.66 Point)	1	0.5
M = 24.51, *SD* = 3.49, Min = 16.00, Max = 30.00		

The results of the predictive analysis between the studied factors and HIV prevention behavior among

incarcerated men who have sex with men (MSM) in prison revealed that five variables significantly predicted HIV prevention behavior in this population. These variables, in order of predictive strength, were: partner influence on HIV prevention behavior (β = 0.261, p < 0.001), knowledge about HIV prevention (β = 0.236, p < 0.001), sexual role (β = 0.128, p = 0.047), perceived barriers to HIV prevention (β = -0.234, p = 0.001), and perceived susceptibility to HIV infection (β = 0.160, p = .019). Together, these variables significantly predicted 32.0% of the variance in HIV prevention behavior among incarcerated MSM (R^2 = 0.320, Adjusted R^2 = 0.301, F = 17.205, p < 0.001) (Table 2)

Table 2 Regression Analysis of Factors Influencing HIV Prevention Behavior Among Incarcerated Men Who Have Sex with Men (n = 189)

Factor	B	β	t	P-value
Partnerinfluence	0.358	0.261	3.781	<0.001
Knowledge	0.517	0.236	3.655	<0.001
Sexual role	1.276	0.128	1.999	0.047
Perceived barriers to HIV prevention	-0.155	-0.234	-3.279	0.001
Perceived susceptibility to HIV infection	0.172	0.160	2.362	0.019

Constant = 25.245, R^2 = 0.320, Adjust R^2= 0.301, F = 17.205, P-value < 0.001

Discussions and Conclusion

This study is an investigation into the HIV prevention behaviors among male inmates who have sex with men (MSM) at Klong Prem Central Prison. It aims to contribute to the body of knowledge on health behaviors in this population. The discussion of the findings is organized in accordance with the research hypotheses. Five factors were found to be consistent with the research hypothesis: partner influence, knowledge, sexual role, perceived barriers to HIV prevention, and perceived susceptibility to HIV infection. These factors were found to have an influence on HIV prevention behaviors, and the discussion is presented as follows.

1. **HIV prevention behaviors among male inmates who have sex with men** The overall findings of the study indicate a high level of HIV prevention behaviors, which is consistent with previous studies on HIV prevention behaviors in prisons.[22-23] These findings suggest that both daily life behaviors and sexual behaviors related to HIV prevention are at a high level. This may be due to the implementation of programs or the dissemination of information regarding HIV prevention within the prison. Additionally, HIV screening is routinely conducted upon intake, during incarceration, and prior to release, leading to increased awareness and effective HIV prevention behaviors among inmates. These results align with previous studies on HIV prevention behaviors among inmates and MSM in the general population.[22-23,27-28]

HIV prevention behavior in daily life was found to be at a high level. This aspect of daily life in terms of HIV prevention can be explained as behaviors that do not pose a risk of HIV infection through blood exposure or the sharing of sharp objects such as razors, nail clippers, or tattooing and piercing equipment without proper sterilization while in prison. Such behaviors can increase the risk of exposure to the blood of other inmates who may be infected, thus leading to HIV transmission through daily activities. Since prisons have regulations prohibiting inmates from possessing sharp objects, inmates are not allowed to personally own such items, leading them to share sharp tools. This finding is consistent with previous studies in prison settings which reported that inmates shared sharp instruments without proper cleaning methods.[22-24]

HIV prevention behavior in terms of sexual activity was found to be at a high level. This finding aligns with previous studies conducted among inmates.[22-23] It can be explained that the participants reported a high level of sexual activity between inmates. However, when considering specific behaviors, it was found that oral sex often occurred without the use of condoms. This may be due to the belief among inmates that condoms are only necessary for anal intercourse. Additionally, the use of condoms together with non-compatible lubricants (other than gel specifically designed for condoms) was found to be at a moderate level. This may be due to inadequate provision of protective equipment for sexual activity, possibly stemming from limited availability of such protective items.[28]

2. Factors influencing HIV prevention behaviors include partner influence, knowledge, sexual role, perceived barriers to HIV prevention, and perceived risk of HIV infection. These factors can be discussed individually as follows. Partner influence refers to the extent to which inmates perform HIV prevention behaviors based on their partners. The partner is one of the critical factors. That is, if an inmate is highly compliant with their partner and the partner does not wish to engage in HIV preventive behaviors, the inmate is likely

to refrain from prevention as well. The effect of partner influence varies depending on the situation. This finding is consistent with studies among men who have sex with men, which found that partner compliance is associated with HIV prevention behaviors.[17-18]

Knowledge results from inmates receiving information about HIV prevention through various programs conducted within the prison, or it may be knowledge acquired from outside prior to incarceration. Knowledge about HIV prevention, when consistently provided through campaigns promoting HIV prevention, leads to memory and understanding that are ultimately reflected in HIV preventive behaviors. This is consistent with studies among men who have sex with men and prison inmates, which found that knowledge is associated with HIV prevention behaviors.[17-18,23,30]

Sexual role in male-to-male sexual intercourse involves individuals who take on the insertive role (i.e., those who penetrate), which is analogous to the male role, and those who take on the receptive role, which is analogous to the female role. There are also individuals who switch roles, meaning they can take on both insertive and receptive roles during sexual activity. In the context of sexual activity within the prison setting, individuals in the insertive role are considered to have a dominant sexual position. That is, the insertive partner holds more power than the receptive one. If the insertive partner chooses not to use a condom during intercourse, the receptive partner may or may not comply, depending on the context and their level of acquiescence during the sexual encounter. Therefore, HIV preventive behaviors in this study may depend on sexual roles and the situational context of the sexual activity. This finding is consistent with studies among men who have sex with men, which found that sexual roles are associated with risky sexual behaviors for HIV transmission.[18,31]

Perceived barriers to HIV prevention refer to the extent to which inmates perceive difficulty in engaging in preventive behaviors. The overall perception of barriers to HIV preventive behaviors was found to be at a moderate level. When examining individual items, it was found that requesting condoms was perceived as difficult due to complicated procedures, such as having to submit a written request, which is then compiled and forwarded by correctional staff to the prison's healthcare unit on a monthly basis. Moreover, condoms are in limited supply. This indicates that when inmates perceive obtaining protection for sexual intercourse as a complicated process, they may not engage in HIV preventive behaviors.This finding is consistent with the Health Belief Model[13-14], which posits that perceived barriers to preventive actions represent the individual's view of the difficulties involved. When individuals perceive greater barriers, they are less likely to engage in health-protective behaviors. Additionally, this is consistent with studies conducted among inmates[22], which found that perceived barriers to HIV prevention are negatively associated with preventive behaviors against HIV infection.

Perceived susceptibility to HIV infection: When inmates have a low perception of barriers to HIV prevention combined with a high perception of the risk of HIV infection within the prison, they are more likely to exhibit preventive behaviors. The findings of this study revealed that the overall level of perceived susceptibility to HIV infection among inmates was high. For example, individual items such as "Being in prison increases your risk of HIV infection due to not using condoms," and "Sharing tattooing or genital modification equipment with others" reflected a strong perception of risk. This finding is consistent with the Health Belief Model[13-14], which posits that individuals who perceive themselves to be at risk of a disease are more likely to engage in behaviors that reduce the likelihood of contracting the disease. This is also consistent with studies among men who have sex with men, which found that perceived susceptibility to HIV infection is associated with preventive behaviors.[17]Furthermore, the findings align with previous studies on HIV preventive behaviors.[30,32-34]

Factors that did not influence HIV preventive behaviors among incarcerated men who have sex with men included perceived benefits of HIV prevention, perceived self-efficacy in HIV preventive behaviors, and age. These findings can be explained as follows:The average age of the sample was 35 years (SD = 7.48), which falls into early adulthood. Nearly half of the participants (50.3%) were in this age group, with an average incarceration period of 20 years (SD = 14.42). Given this, the inmates were at an age where they had developed their own identities and autonomy. Additionally, the prolonged period of incarceration likely diminished the influence of age on HIV preventive behaviors.As for

perceived benefits of HIV prevention, the long duration of imprisonment may lead inmates to perceive little value in preventing HIV infection. This aligns with previous research conducted among prison inmates.[22]The last factor, perceived self-efficacy in HIV preventive behaviors, may be explained by the belief among inmates that they lack the ability to effectively prevent HIV infection. This could be due to the closed and restrictive nature of the prison environment, which differs significantly from life outside. Moreover, sexual activity in prison is often associated with the exchange of goods, money, or care within the prison context.[35] Therefore, perceived self-efficacy may not significantly influence HIV preventive behaviors in this setting.These factors contributed to findings that did not support the research hypothesis.

The findings of this study differ from previous research conducted in prison settings. A key variable identified in this study was partner influence, which emerged as a significant predictor of HIV preventive behaviors during sexual activity. The research suggests that, regardless of the inmates' level of knowledge about HIV prevention, their susceptibility to partner influence during sexual activity could lead to unprotected sex. These findings can be applied in two major areas Policy Development and Disease PreventionThese implications will help guide the integration of research findings into practical strategies for improving health outcomes and HIV prevention among incarcerated men who have sex with men.

1. Policy Implications;Public health agencies, the Medical Services Division of the Department of Corrections, administrators, and related stakeholders can utilize the influential factors identified in this study such as partner influence, perceived barriers to HIV prevention, perceived risk of HIV infection, and knowledge of HIV prevention as guidelines for formulating policies on HIV and sexually transmitted infection (STI) prevention and care under the Department of Corrections.The findings provide insights into sexual behavior patterns among men who have sex with men (MSM) in prison, which can support the development of strategies aimed at Enhancing inmates' awareness to resist partner influence; Implementing HIV education programs;Designing programs aligned with perceived risk to increase risk awareness; Reducing barriers that prevent consistent preventive behaviors And planning and implementing disease prevention projects effectively.These efforts will contribute to solving the issue of HIV transmission among MSM in prison with greater efficiency and can also inform long-term strategic planning in correctional facilities to comprehensively prevent the spread of sexually transmitted infections among inmates.

2. Disease Prevention; Prison nurses and related personnel can use the findings of this research as foundational information for developing systems to prevent and control HIV infection. The identified factors can serve as health determinants guiding medical personnel in implementing appropriate care, preventing the spread of HIV in prisons, and promoting preventive behaviors among men who have sex with men (MSM). Examples of appropriate interventions include . Distributing condoms and lubricants comprehensively and consistently, Establishing clear procedures for accessing protective equipment,And integrating these efforts into broader STI and HIV prevention programs tailored to the correctional environment.These actions aim to reduce transmission and promote sustained preventive behaviors in the prison population, particularly among high-risk groups such as MSM.

Based on the study results regarding factors influencing HIV preventive behaviors among incarcerated men who have sex with men, it is evident that continuous promotion of HIV prevention knowledge among inmates is essential. This aims to raise awareness and encourage preventive practices during incarceration. In addition, it is necessary to reduce obstacles to HIV prevention and to promote the development of healthy partner relationships and sexual roles, in order to minimize the likelihood of engaging in risky behaviors due to partner influence. Furthermore, there should be adequate support and provision of HIV preventive equipment to facilitate protective behaviors among inmates. These efforts contribute not only to improved preventive practices during incarceration but also to the reduction of HIV transmission within the prison setting.

The research participants were diverse and represented all prison zones, allowing the data to accurately reflect the real context of the setting. The anonymous data collection method enabled participants to respond freely and truthfully. Furthermore, the study received strong cooperation from participants, which contributed to a smooth and complete data collection process as planned.

This study employed a snowball sampling method. When incomplete questionnaires were returned, it was

necessary to re-randomize participants from the inmate population, which extended the research timeline. Additionally, there was limited cooperation from some prison staff within the zones, due to the confidential nature of the study. Although a designated private area was arranged for data collection, some staff were rotated to new shifts and were unfamiliar with the research context. As a result, the researcher had to repeatedly explain the study's procedures and objectives to newly assigned officers responsible for overseeing the designated questionnaire area.

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