

Adopting the Health Belief Model and Social Cognitive Theory Framework to Explore Factors Impacting STIs Prevention Behaviors Among Youth: A Case Study in Vietnam

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Abstract

Sexually transmitted infections (STIs) are an important health concern in Vietnam, with a consistently increasing prevalence, particularly in youths. These infections have significant consequences for personal health, longevity, and the welfare of society. Preventive measures against STIs among Vietnamese young have become common, bringing noteworthy challenges despite the importance of the circumstances. The authors evaluate the actual preventive measures used by this particular population for STIs. Our research explores the influences on STI prevention by combining the Social Cognitive Theory (SCT) with the Health Belief Model (HBM). We collected data from 835 respondents across various areas of Vietnam via SPSS 26.0 and SmartPLS 4.0 software. The results highlighted the key factors that influence STIs prevention and provided recommendations to enhance these preventive actions. The goal of this research is to reduce STIs rates and enhance sexual and reproductive health in young adults to ensure a better future.

Keywords: STIs prevention behaviors, the Health Belief Model, Social Cognitive Theory, Youth in Vietnam

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1. Introduction

The widespread global issue of STIs has emerged as an important threat to public health. The World Health Organization (2023) states that there are over 1 million new cases of STIs reported daily among humans aged 15 – 49, leading to almost 374 million new infections annually for four primary infectious diseases: chlamydia, gonorrhea, trichomoniasis, and syphilis. STIs prevalence in Vietnam has significantly risen in the last ten years, particularly among the youth. Half of the 20 million new cases of STIs impacted persons aged 15 – 24 (WHO, 2023).

Sexually transmitted infections carry serious effects. Individuals may not be aware for an extended period after infection, perhaps spanning months or even years. Nevertheless, these illnesses may still have adverse effects on an individual's overall health and be transmitted to their partners. Untreated sexually transmitted diseases may lead to severe repercussions, infertility, and perhaps deadly effects (WHO, 2024). Sexually transmitted illnesses such as HPV and HBV are preventable with vaccines but cannot be cured. This requires ongoing treatment and places significant time and financial burdens on individuals and the system of public health. Sexually transmitted infections pose a threat to human health and burden the system of healthcare, especially in countries such as Vietnam with little resources (Farshbaf-Khalili *et al.* 2014; Ford *et al.* 2019). Vietnam, a developing country, has challenges in controlling the expansion of STIs and their consequences, necessitating the enforcement of rules to encourage preventive actions.

STIs prevention practices have been researched globally for a long time and are continuously being researched using various techniques (Donadiki *et al.* 2014; Griese *et al.* 2016; Hill *et al.* 2018; Leung *et al.* 2019). Exporting research findings across different cultures requires careful assessment and modifications. Vietnam has been influenced by the Confucian history and unique social and physical environmental conditions, setting it apart from other countries. Current studies in Vietnam have mostly focused on analyzing attitudes, awareness, and preventative measures related to STIs, as well as biological characteristics, with little evaluation of contributing variables. Furthermore, most studies have examined behaviors such as condom usage, vaccination, and STI testing separately (Slonim *et al.* 2005; Getachew *et al.* 2013; Donadiki *et al.* 2014; Lin *et al.* 2017), with fewer studies on variables influencing several behaviors together (ZakPlace & Stern, 2004). Therefore, the authors have chosen to use the Health Belief Model to investigate how individual attitudes and beliefs, together with societal and cultural influences, impact young people's participation in STIs prevention activities.

2. Theoretical background

2.1 STIs prevention behaviors

Promoting preventive actions is essential for communities and individuals because of the importance of sexual well-being and the challenges posed by STIs. Preventing STIs can be achieved through several productive methods that may evolve with advancements in medicine. The research examines behaviors that include condom use, HPV, HBV,.. vaccination, and undergoing STI testing before starting sexual activity with a new partner and routinely during a relationship with another individual (Holmes *et al.* 2004; Fairley & Read, 2012).

2.2 Personal Factors

The reasons for engaging in preventive behaviors may be explained by factors from the Health Belief Model (HBM) and the Social Cognitive Theory (SCT), which include perceived threats, perceived benefits, perceived barriers, and self-efficacy beliefs. Over time, the perception of the susceptibility and severity may combine to provide a more comprehensive understanding of the threat (Champion & Skinner, 2008). If a person believes they are at threat of an illness, understands the severity of the consequences, regards the benefits of protective behaviors, believes the advantages of acting outweigh the barriers and has confidence in their ability to conduct these actions, they are more likely to engage in STI preventative actions. Several studies have demonstrated that these variables influence behaviors in young adults, such as condom usage (Basen-Engquist K, 1992; Zak-Place & Stern, 2004; Getachew *et al.* 2013), vaccination (Slonim *et al.* 2005; Donadiki *et al.* 2014), and STIs testing before and during new sexual activities and relationships (Zak-Place & Stern, 2004; Slonim *et al.* 2005; Lin *et al.* 2017).

2.3 Environmental Factors

Youth may get knowledge from official resources that involve schools, parents, and social media (Reeves *et al.* 2006; Reis *et al.* 2011). Young people who have received information about STIs are advised to practice protective measures, including using preventative methods, discussing STIs, and getting regular testing and screening (Reeves *et al.* 2006; Reis *et al.* 2011; Rhodes *et al.* 2016). Moreover, the frequency and depth of this educational material provide a beneficial impact (Goni & Rahman, 2012).

Youth are greatly impacted by peer norms, which are standards set by their peers' expectations. Adolescents at this stage focus on associating with friends and adhering to health safety practices, taking into consideration their expectations and viewpoints (Steinberg & Morris, 2001). The technique is known as role modeling, imitation, and observational learning. Peers have a crucial role in offering counsel and understanding about sexuality (Gezahegn *et al.* 2016). Observing peers engaging in safe sexual behaviors may motivate people to adopt prudent attitudes and participate in further STIs prevention measures (Boone & Lefkowitz, 2004; Young & Jordan, 2013). Peer norms have a crucial role in influencing teens' intents and behaviors related to sexual protection.

Gender norms are societal standards that regulate suitable actions for individuals according to their gender (Gupta, 2000). Confucian beliefs in Vietnam significantly influence gender norms, which are anticipated to affect STIs prevention initiatives. Men are often seen as having authority in decision-making and leading roles and may exhibit dominance in sexual interactions compared to women (Ubillos & González, 2000; Nguyen & Liamputtong, 2007). Women's health is at risk because they are less likely to request their partners to use condoms, get accurate information about sexually transmitted diseases, or use vital healthcare services (Palència *et al.* 2014; Ouahid *et al.* 2023). Men could be swayed to participate in risky sexual behaviors as a way to assert their masculinity, thus leading to a reluctance to utilize contraception. Some males may think that avoiding sexually transmitted illnesses is only a responsibility for women.

3. Research model and hypotheses

The core concepts of the Health Belief Model (HBM) and Social Cognitive Theory (SCT) explain how individuals form intentions to adopt preventative measures against STIs, while also partially forecasting the impact of environmental conditions. Identifying factors in the environment that influence STIs prevention measures is challenging and requires widespread acknowledgment. Zak-Place (2004) proposes that integrating additional elements with existing components from the Health Belief Model (HBM) and Social Cognitive Theory (SCT) might provide a more thorough and complete model for encouraging general well-being behavior and avoiding sexually transmitted infections (STIs). The authors included contextual factors including education, peer norms, and gender norms into the research model authors developed:

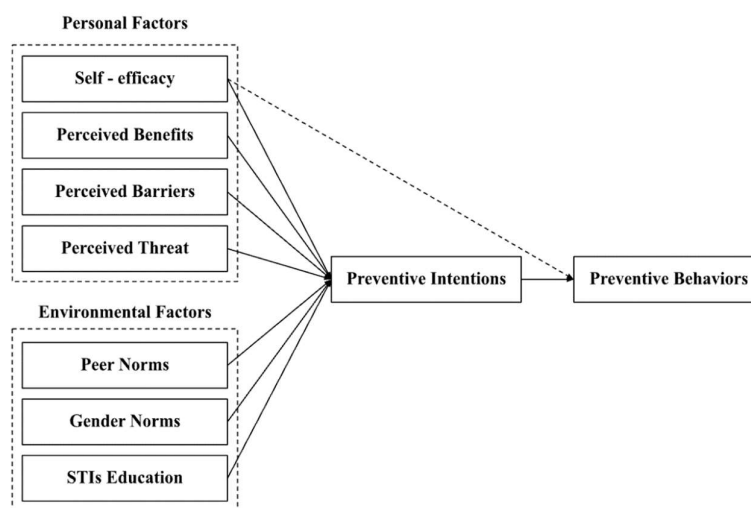


Fig 1. Research model

Source: Developed by the authors based on literature review

The factors were examined by measuring the agreement response rate on a Likert scale with values ranging from 1 to 5. The authors provide a hypothesis for both factors shown below:

- H1.** Self-efficacy has a positive impact on STIs preventive intentions.
- H2.** Self-efficacy has a positive impact on STIs prevention behaviors.
- H3.** Perceived Benefits have a positive impact on STIs preventive intentions.
- H4.** Perceived Barriers have a positive impact on STIs preventive intentions.
- H5.** Perceived Threat has a positive impact on STIs preventive intentions.
- H6.** Peer Norms have a positive impact on STIs preventive intentions.
- H7.** Gender Norms have a negative impact on STIs preventive intentions.
- H8.** STIs Education has a positive impact on STIs preventive intentions.
- H9.** Preventive Intentions has a positive impact on STIs preventive behaviors.

4. Research methodology

The report details the identified issues in two main stages. The study's founding concept and first measurement instruments were developed based on theoretical foundations and a thorough review of the current literature. The qualitative research included conducting in-depth interviews with a group of 20 individuals between the ages of 16 to 30. The objective was to validate measurement scales, identify additional aspects, and enhance the survey instrument via conversation. The researchers revised the measurement questions for clarity and concision based on the information provided by participants throughout the discussions. Specialized language in certain inquiries was modified to ensure easy comprehension. Then, the enhanced questionnaire was assessed with 126 participants. The reliability of the measuring devices was assessed after the conclusion of the first phase. The test used Cronbach's Alpha coefficient to adjust the scales and framework in order to develop the final questionnaire. The inquiries were structured logically according to the research objectives.

During the subsequent stage, the writers gathered 835 observations. The study mostly consisted of female participants, comprising 57.8% of the sample. The study mostly targeted students, with 35.3% falling inside the 19 to 21 age bracket, and 26.9% belonging to the 16 to 18 age category. 67.1% of the survey population were urban dwellers, while the remaining 32.9% were from rural areas.

The analysis is going to be conducted on all 835 valid responses utilizing SPSS 26.0 and SmartPLS 4.0 software. The research will include evaluating the reliability using Cronbach's Alpha, validating the model using a PLS-SEM analysis, and testing the presented hypotheses with SEM analysis and Bootstrap validation.

5. Results

5.1 Reliability test using Cronbach's Alpha

Factor analysis utilizing Cronbach's Alpha demonstrated that each component in the measuring scale had a reliability coefficient of more than 0.6 and a Corrected Item-Total Correlations of no less than 0.3. The measuring scale's reliance was assessed in a survey sample, showing inter-variable correlation coefficients ranging from 0.616 to 0.892. All nine measurement scales for the factors were deemed trustworthy, and the data correlation aligns with the prescribed scales of measurement, meeting the requirements for conducting Exploratory Factor Analysis (EFA).

Table 1. Cronbach's Alpha Reliability Test Results

Components	Items	Cronbach's Alpha	Corrected Item - Total Correlation	Number of deleted items
Self - efficacy	SE	0.861	0.715 - 0.769	0/3
Perceived Benefits	PBE	0.814	0.681 - 0.759	0/4
Perceived Barriers	PBA	0.872	0.696 - 0.763	0/4
Perceived Threat	PT	0.875	0.616 - 0.782	0/5
Peer Norms	PE	0.803	0.619 - 0.674	0/3
Gender Norms	GE	0.920	0.736 - 0.892	0/4
STIs Education	ST	0.836	0.655 - 0.747	0/3
Preventive Intention	PI	0.898	0.664 - 0.829	0/5
Preventive Behavior	PB	0.913	0.819 - 0.850	0/5

Source: Research results of the authors on SPSS software

5.2 Quality of variable measurement

The Outer Loading coefficient measures the level of connection between an observed component and a hidden variable. Table 2 displays the Outer Loading coefficients of the first-order equation variables above 0.708, demonstrating the significance of each variable in the overall model (Hair et al., 2019).

Table 2. Results of Outer loadings

Components	The smallest Outer loadings
Self - efficacy (SE)	0.875
Perceived Benefits (PBE)	0.884
Perceived Barriers (PBA)	0.757
Perceived Threat (PT)	0.825
Peer Norms (PE)	0.812
Gender Norms (GE)	0.839
STIs Education (ST)	0.837
Preventive Intention (PI)	0.782
Preventive Behavior (PB)	0.880

Source: Research results of the authors on SmartPLS software

5.3 Discriminant validity

Fornell and Larcker (1981) indicated that discriminability is ensured if the square root of the Average Variance Extracted (AVE) for each latent variable is greater than the correlations between the latent variables.

Table 3. Discriminant validity - Heterotrait-monotrait ratio (HTMT)

	GE	PB	PBA	PBE	PE	PI	PT	SE	ST
GE									
PB	0.034								
PBA	0.035	0.065							
PBE	0.034	0.163	0.033						
PE	0.080	0.674	0.085	0.110					
PI	0.039	0.598	0.035	0.291	0.551				
PT	0.039	0.273	0.030	0.116	0.131	0.427			
SE	0.024	0.608	0.063	0.200	0.550	0.624	0.190		
ST	0.025	0.535	0.045	0.308	0.367	0.777	0.518	0.488	

Source: Research results of the authors on SmartPLS software

All the HTMT coefficients in Table 4 are < 0.85, ensuring discriminant validity.

5.4 Evaluation of collinearity/multicollinearity

The authors evaluate multicollinearity by examining the final outcomes of the PLS Algorithm. The researchers rely on Inner Collinearity Statistics (VIF) to assess the VIF results and investigate multicollinearity among latent variables in the research. This item is crucial because it indicates the potential for multicollinearity among the independent latent qualities.

Table 4. Collinearity/multicollinearity statistics (VIF) - Inner model

	GE	PB	PBA	PBE	PE	PI	PT	SE	ST
GE						1.009			
PB									
PBA						1.010			
PBE						1.083			
PE						1.310			
PI		1.434							
PT						1.256			
SE		1.434				1.431			
ST						1.566			

Source: Research results of the authors on SmartPLS software

The authors showed the Variance Inflation Factor (VIF) coefficients in a data matrix style, emphasizing the interdependence of the two variables, PI and PB, as the dependent variables in the Structural Equation Modeling (SEM) study. This requires analyzing the multicollinearity across different factors that influence the dependent variables. A VIF score of less than 2 suggests the absence of multicollinearity problems in the model (Hair et al., 2019). The study confirmed the absence of multicollinearity in the model as the VIF coefficients for both independent and mediator variables were below 2, confirming the research requirements.

5.5 Structural Equation Modeling (SEM) and Hypothesis test

Conducted Structural Equation Modeling (SEM) to examine the intricate relationship between the mediating variable Preventive Intention (PI) and the independent variable Preventive Behaviors (PB) together with other independent variables. The results are shown in Figure 2:

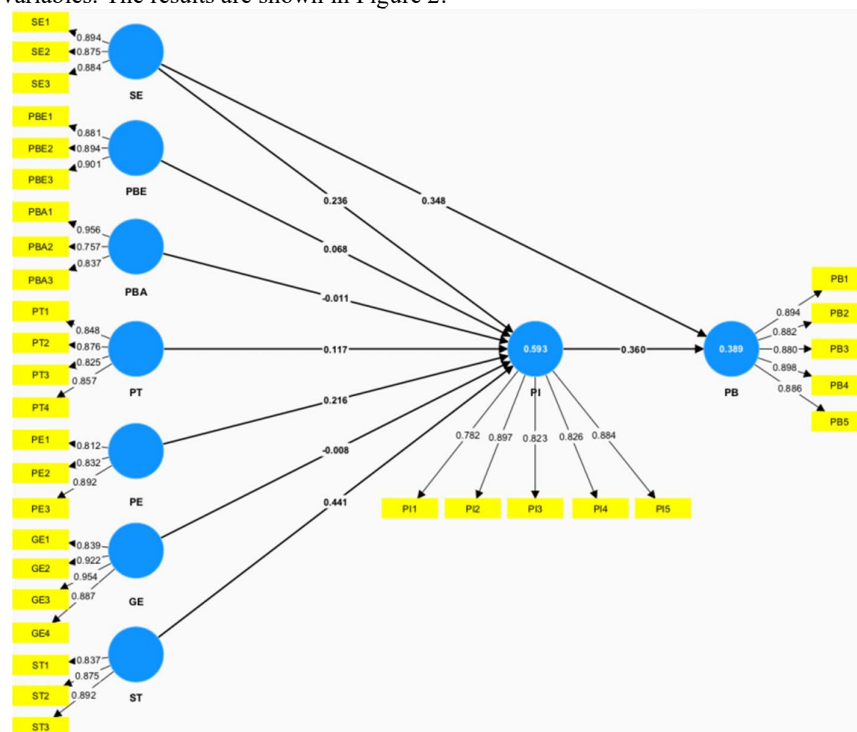


Fig 2. Confirmatory factor analysis results

Source: Research results of the authors on SmartPLS software

The authors selected a sample size of 1000 for the Bootstrapping approach to meet the need for an initial sample representing individuals, even though the official survey obtained 835 replies. Below all the results of the Bootstrap test:

Table 5. Path coefficients - Mean, STDEV, T values, P value

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
GE → PI	-0.008	-0.009	0.027	0.318	0.751
PBA → PI	-0.011	-0.008	0.027	0.395	0.693
PBE → PI	0.068	0.068	0.025	2.763	0.006
PE → PI	0.216	0.216	0.030	7.214	0.000
PI → PB	0.360	0.360	0.040	9.043	0.000
PT → PI	0.117	0.118	0.027	4.379	0.000
SE → PB	0.348	0.348	0.043	8.105	0.000
SE → PI	0.236	0.235	0.029	8.008	0.000
ST → PI	0.441	0.441	0.036	12.221	0.000

Source: Research results of the authors on SmartPLS software

5.6 Discussion of the results of the hypothesis results

Table 5 indicates a small standard deviation. As a result, the initial sample in the model is deemed credible, and the model remains appropriate for a sample size beyond 1000 individuals.

Table 6. Final Conclusion

Number	Hypothesis	Decision
1	Self-efficacy has a positive impact on STIs preventive intentions.	Accept
2	Self-efficacy has a positive impact on STIs prevention behaviors.	Accept
3	Perceived Benefits have a positive impact on STIs preventive intentions.	Accept
4	Perceived Barriers have a positive impact on STIs preventive intentions.	Reject
5	Perceived Threat has a positive impact on STIs preventive intentions.	Accept
6	Peer Norms has a positive impact on STIs preventive intentions.	Accept
7	Gender Norms has a negative impact on STIs preventive intentions.	Reject
8	STIs Education has a positive impact on STIs preventive intentions.	Accept
9	Preventive Intentions has a positive impact on STIs prevention behaviors.	Accept

Source: Research results of the authors on SmartPLS software

The author's research reveals the influence of five aspects on individuals' intentions and behaviors related to STI prevention, ranked from strongest to weakest effect: STIs education, self-efficacy, peer norms, perceived danger, and perceived benefit. Education is considered the most crucial element in promoting STI prevention (Braeken & MSc, 2008). In Vietnam, education is highly valued for its role in imparting information and understanding, influencing the choices of young people (Vuong, 2022). Peer standards are considered crucial for providing young individuals with knowledge and direction. The effects of self-efficacy, perceived danger, and perceived benefits align with the proposed framework and hypothesis.

Our results do not show a significant influence of gender norms and perceived barriers on the intention and

actions related to STIs prevention, even if other studies have reached different outcomes. Current youth shifting gender ideas may stem from their exposure to diverse and progressive attitudes due to cultural intersections. Extensive awareness campaigns and educational initiatives in Vietnam could have decreased people's awareness of obstacles to practicing protective practices.

6. Conclusion and recommendation

6.1 Conclusion

The outcomes of the research show that contextual factors impact intentions to avoid certain behaviors and may be integrated with individual traits in the theoretical framework to provide a deeper comprehension of actions. STI education is considered crucial and deep-rooted for young individuals in Vietnam. Participating in educational events may help promote intentions and actions to avoid STIs by influencing the knowledge and attitudes of young persons and their peers. Various cultural and societal norms might impact individual behavior, necessitating more study to achieve effective and enduring behavioral changes.

6.2 Recommendation

For the government, government significantly contributes to improving STIs prevention in Vietnam via the adoption of beneficial policies and strict laws related to educational and awareness activities. Education should focus on increasing understanding of STIs, including infection rates and related dangers, while also advocating preventative techniques and enhancing general skills to enable people to act confidently. The laws and regulations implemented provide a crucial framework for local organizations and businesses to carry out their activities consistently, carefully, and by the national framework. Vietnam, as a developing nation, gains significant advantages from the knowledge and practices of more advanced countries to enhance its healthcare and educational infrastructures. The government may collaborate with developed nations to guarantee that STIs education and awareness campaigns are accurate, accessible, and quickly spread across the country.

For hospitals, hospitals should organize community outreach initiatives to actively educate persons on sexual health and the prevention of sexually transmitted illnesses. The primary emphasis should be on providing in-person services such as mobile clinics and educational seminars to efficiently reach people most in need, even if digital tools may help in organizing and monitoring programs. Secondly, it enhances the skills of healthcare providers in communicating with patients and showing empathy, which is essential for addressing delicate issues related to sexual health. Training should include tactics for both face-to-face and virtual meetings to provide workers with the skills to convey compassionate care effectively in many settings. Hospitals must guarantee that digital health services enhance traditional healthcare procedures as they expand in this sector. This entails using telehealth as a supplementary advantage to in-person therapy, especially for follow-up appointments or delivering more information to enhance the healthcare experience.

For schools, schools are being encouraged to include sexual health education into their curriculum by combining conventional teaching techniques with internet resources. The technique should include participating in classroom discussions, peer-led activities, and using trusted online resources to provide students with a comprehensive education on the issue. Schools should create initiatives to encourage parents to actively participate in their children's sexual health education. This may include parent-teacher meetings, seminars, and providing tools to parents to facilitate open conversation at home, using technology devices to improve communication and information exchange.

For families, families should provide an atmosphere that facilitates open talks about sexual health. Parents may teach their children about sexual well-being by integrating traditional conversations with internet resources, focusing on making informed decisions and fostering positive connections. Additionally, participate in community health programs and events that provide information on STIs and sexual health. The focus should be on individual participation and community support, even if these activities may include communication to reach a larger audience.

For individuals, Early screening and diagnosis are crucial in avoiding the rise of sexually transmitted infections. Point-of-care tests now allow for easier access to STIs treatments, leading to faster treatment and improved health results. Regular usage of condoms is crucial for avoiding sexually transmitted illnesses. Individuals with a higher risk profile may consider high-intensity behavioral therapy, which includes teaching and guidance to modify dangerous sexual practices. Furthermore, promoting sexual health and disseminating knowledge responsibly throughout cultures might enhance awareness and protective measures.

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