Effectiveness of a Structured HIV Health Education Talk on Knowledge, Attitude, Risky Behaviours, and Preventive Measures Among Malaysian University Students

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ABSRTRACT

HIV remains a persistent public health threat among Malaysian university students, with rising infection rates attributed to misconceptions, limited awareness, and engagement in risky sexual behaviors. Despite ongoing national prevention initiatives, gaps in knowledge and behavioral practices continue to place young adults at heightened risk. This concept paper proposes a structured four-hour HIV health education talk as an evidence-informed approach to strengthen HIV literacy, reshape risk perceptions, and promote preventive behaviors among university students. Guided by the Knowledge–Attitude–Practice (KAP) Model and the Health Belief Model (HBM), the proposed intervention integrates interactive teaching, myth correction, risk-reduction counselling, and practical preventive strategies. The concept highlights the theoretical foundation, relevance, and potential impact of implementing structured, student-centered HIV education in higher learning institutions. It also underscores how such interventions could support national public health goals and inform future program development aimed at reducing HIV transmission among youth. This paper serves as a basis for designing a comprehensive educational initiative tailored to university settings in Malaysia.

HIV awareness, university students, health education, behavioral prevention, concept paper

INTRODUCTION

Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) continue to pose significant global public health challenges, particularly among young people aged 15 to 24. Guided by ambitious global targets such as the United Nations Program on HIV/AIDS (UNAIDS) 95–95–95 strategy and national public health frameworks, countries worldwide have intensified their efforts to reduce HIV prevalence, expand access to testing and treatment, and promote preventive behaviors especially among youth populations [17]. In alignment with these global initiatives, the Centers for Disease Control and Prevention (CDC) in the United States aims to reduce new HIV infections by 75% by 2025 and 90% by 2030 through enhanced testing, early treatment, and comprehensive prevention campaigns [26].

In Malaysia, the Ministry of Health (MOH), in collaboration with the Malaysian AIDS Foundation (MAF) and other key organizations, has implemented extensive HIV prevention, treatment, and care programs. These include the provision of free first-line antiretroviral therapy (ART), Voluntary Counselling and Testing (VCT), and Provider-Initiated Testing and Counselling (PITC) services available across 1,039 government clinics and 141 hospitals nationwide [4]. All initiatives are anchored under the National Strategic Plan for Ending AIDS (NSPEA) 2016–2030, which aligns with the UNAIDS vision of eliminating AIDS as a public health threat by 2030 through expanded access to care, stigma reduction, and evidence-based prevention interventions [4].

Despite these national and international commitments, Malaysia has witnessed a worrying resurgence of HIV infections among young adults, particularly those enrolled in higher education institutions. National surveillance data indicate that the majority of new HIV cases occur among males aged 20–29 years, the demographic most represented in universities [33]. Between 2020 and 2024, more than 1,000 Malaysian university students tested

positive for HIV, including 222 new cases reported in 2024 alone, highlighting a persistent gap between awareness and behavioral practice [1]. According to Dr. Zaiton Yahaya of the Malaysian AIDS Foundation, sexual activity remains the primary mode of transmission among students, with limited awareness of risks and inconsistent use of protection serving as major contributors to this surge [32].

Recognizing the growing concern about rising HIV cases among youth, the Ministry of Health (MOH) has continued to strengthen its national response through increased resource allocation and policy support. In 2025, an additional RM1 million allocation was announced for the Differentiated HIV Services for Key Populations (DHSKP) program, raising the total annual funding to RM8 million. According to Health Minister Datuk Seri Dr. Dzulkefly Ahmad, this expanded funding is intended to enhance prevention, screening, and treatment services nationwide while intensifying outreach and education among key and youth populations in educational institutions [23]. This renewed investment underscores Malaysia's commitment to curbing new infections, improving service accessibility, and enhancing the quality of life for people living with HIV (PLHIV).

However, despite these ongoing efforts, behavioral and educational gaps remain prominent, particularly among university students. Evidence indicates that knowledge alone does not always lead to safer sexual practices. Studies among Malaysian undergraduates, including those from health science programs, reveal persistent misconceptions about HIV transmission, prevention, and treatment [8]. Many students remain unaware that asymptomatic individuals can transmit HIV or that consistent condom use and regular testing are essential preventive measures. Furthermore, cultural and religious sensitivities often limit open conversations about sexual health, perpetuating stigma and discrimination toward PLHIV. These social barriers discourage students from accessing HIV testing, attending awareness programs, or engaging in preventive practices. Such misconceptions are particularly concerning among nursing and healthcare students, whose professional roles require not only accurate knowledge but also the ability to educate others and advocate for HIV awareness within clinical and community settings.

These challenges are not unique to Malaysia but reflect a broader global pattern. Studies in Kenya, South Africa, and China show that university students, despite having moderate levels of HIV knowledge, continue to engage in high-risk sexual behaviors due to peer influence, negative attitudes, misinformation, and a perceived sense of invulnerability [2, 24]. Similarly, research across Asia and Africa indicates that while awareness campaigns improve general knowledge, they often fail to produce lasting behavioral change without structured, evidence-based educational approaches that address both cognitive understanding and motivational factors [30, 11].

In Malaysia, many university-based HIV campaigns tend to be short-term, lecture-style, and unstructured, often lacking systematic evaluation to measure their effectiveness. Consequently, students may acquire factual information without translating it into meaningful behavioral outcomes. This gap underscores the need for targeted, structured HIV health education programs that are interactive, student-centered, and grounded in established behavioral theories.

To address this issue, the present study proposes evaluating the effectiveness of a four-hour structured HIV health education talk, conducted by the researcher, a nursing academic and health educator, designed to improve students' HIV-related knowledge, reduce risky behaviors, and enhance engagement in preventive measures. The intervention adopts a student-centered, interactive approach that bridges the gap between awareness and practice, guided by the Knowledge–Attitude–Practice (KAP) Model and the Health Belief Model (HBM). By integrating these frameworks, the study aims to demonstrate how well-designed educational interventions can enhance HIV literacy, reshape risk perceptions, and promote sustained preventive behaviors among Malaysian university students.

Definition And Concept Clarification

Understanding HIV-related behavior among Malaysian university students requires a clear conceptual foundation. For this concept paper, the Knowledge, Attitude, and Practice (KAP) model serves as the primary framework for examining how students acquire HIV-related information, interpret it through emotional and cultural lenses, and ultimately translate it into behavioral choices. This model is widely used in public health to investigate behavioral determinants and guide health education interventions across various populations [14,3].

Knowledge refers to students' factual understanding of HIV transmission routes, symptoms, risk factors, preventive methods, and available treatment. This cognitive domain forms the basis of risk recognition and informed decision-making. However, evidence consistently demonstrates that high levels of knowledge do not automatically lead to behavior change, particularly in contexts where misinformation, cultural sensitivity, or social stigma prevail. Studies among university populations in Africa and Asia show that students may possess adequate knowledge yet continue engaging in unsafe sexual practices due to conflicting beliefs or low perceived vulnerability [2, 24].

Attitudes encompass beliefs, perceptions, emotional responses, and moral judgments related to HIV and people living with HIV (PLHIV). In Malaysian university settings, attitudes are shaped by cultural expectations, religious influence, peer norms, and societal stigma. These affect students' willingness to undergo HIV testing, discuss sexual health, purchase condoms, or engage in preventive behaviors. Negative attitudes such as fear, shame, and judgment have been shown to limit participation in HIV programs and increase the likelihood of secrecy around sexual behavior [8].

Practices represent the behavioral manifestation of students' knowledge and attitudes. For this study, practices are categorized into two domains:

1 Risky behaviors such as unprotected sex, multiple partners, and substance use before sexual activity.

2 Preventive measures including condom use, HIV testing, risk reduction, and consistent engagement with sexual health information.

These behaviors indicate whether existing knowledge and attitudes are being translated into protective action. However, evidence shows that practices are heavily influenced by personal, social, and structural factors such as peer pressure, cultural norms, perceived stigma, and access barriers [6, 18].

Although KAP components are distinct, they are interconnected. Knowledge often shapes attitudes, and attitudes influence practices, but the process is not linear. Students may know the facts yet continue unsafe behavior due to embarrassment, denial, low self-efficacy, or perceived invulnerability. Therefore, KAP is best understood as a dynamic construct shaped by context and moderated by psychosocial influences commonly faced by university students in Malaysia.

It is important to distinguish KAP from related constructs. Health literacy involves the broader ability to seek, understand, and apply health information; risk perception concerns subjective vulnerability; and behavioral intention reflects motivational readiness often described in the Theory of Planned Behavior. Although these interact with KAP, they do not capture the integrated cognitive–emotional–behavioral continuum that the KAP model embodies.

Figure 1 below illustrates the concept of the KAP model and its roles in shaping HIV-related behavior among university students.

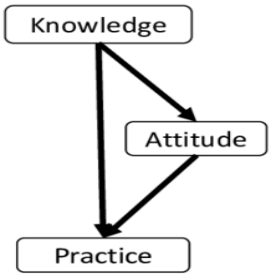

Figure 1: Concept of KAP Model

Theoretical Foundations Related to HIV

To strengthen the conceptual grounding of this study, the Health Belief Model (HBM) is integrated alongside

the KAP model. While KAP outlines the cognitive and behavioural progression of knowledge influencing attitudes and practices, the HBM explains the psychological factors that determine whether an individual will act on that knowledge. This dual approach is essential given the persistent behavioural gap documented among Malaysian university students, where rising HIV infections occur despite increased national prevention efforts.

Within the KAP framework, knowledge encompasses students' understanding of HIV transmission, prevention, and treatment; attitudes reflect beliefs and emotional responses toward HIV and PLHIV; and practices include risk-taking and preventive behaviours. Malaysian evidence indicates that misconceptions such as believing HIV can spread through casual contact or that symptoms are always visible persist despite widespread educational campaigns. These knowledge gaps are compounded by stigma, moral judgments, and limited sexual health education, which collectively influence attitudes and deter preventive action [13].

The HBM complements the KAP model by addressing the internal motivations and perceived barriers that shape health behaviour. Its six core constructs are:

•Perceived susceptibility – students' beliefs about their likelihood of contracting HIV.

•Perceived severity – beliefs about the seriousness of HIV infection.

• Perceived benefits – beliefs that preventive actions (e.g., condom use, testing) will reduce risk.

•Perceived barriers – obstacles such as stigma, embarrassment, cultural taboos, or access issues

•Cues to action – triggers that prompt behavioural change such as educational talks, peer discussions, or digital reminders.

•Self-efficacy – confidence in one's ability to adopt preventive behaviours.

These constructs explain why students who possess accurate HIV knowledge may still avoid testing or fail to use condoms consistently. For instance, a student may understand HIV risks but feel embarrassed buying condoms (a perceived barrier), or believe that HIV "won't happen to them" (low perceived susceptibility). These psychological factors are critical in shaping HIV-related practices among young adults.

In the context of this concept paper, the structured 4-hour HIV health education talk serves as a targeted cue to action intended to:

1. Increase perceived susceptibility and severity
2. Strengthen perceived benefits of preventive behaviour
3. Reduce barriers by addressing stigma and misconceptions
4. Enhance self-efficacy through interactive learning and discussion

In doing so, the intervention bridges the gap between knowledge and practice, an essential step identified in the uploaded study background and national HIV statistics.

Figure 2 illustrates how the KAP model applies to HIV behaviour among university students.

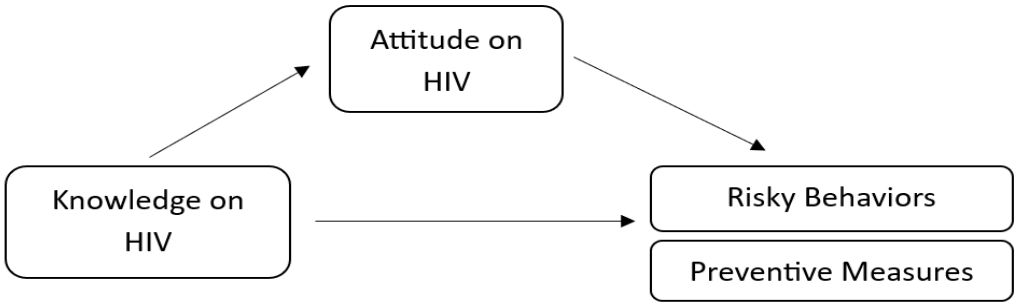

Figure 2: KAP Model Related to HIV

Integration of Kap Model and Health Belief Model

The integration of KAP and HBM strengthens the theoretical foundation of this concept paper by combining both cognitive–behavioural and psychological determinants of HIV-related behaviour. The KAP model provides a natural sequence, knowledge shaping attitudes, which influence practices while the HBM adds depth by explaining why individuals may or may not take preventive actions, even when they are knowledgeable.

Among Malaysian university students, this dual framework is highly applicable. Young adults are at a developmental stage where increased autonomy, peer influence, sociocultural expectations, and reduced parental monitoring intersect. At the same time, many are constrained by religious conservatism, stigma surrounding sexual health, and limited access to comprehensive sexual education. These competing dynamics may lead to inconsistencies between what students know and what they do. For example, a student may understand HIV risk yet continue unprotected sex due to peer pressure, romantic dynamics, or embarrassment discussing condom use.

Educational interventions must therefore go beyond delivering information. They need to reshape attitudes, challenge stigma, address perceived barriers, and build confidence in adopting preventive behaviours. A structured, interactive HIV education talk can effectively serve this role by functioning as both a knowledge-enhancing mechanism (KAP) and a cue-to-action plus motivation-enhancer (HBM).

Figure 3 presents key HBM constructs relevant to HIV prevention.

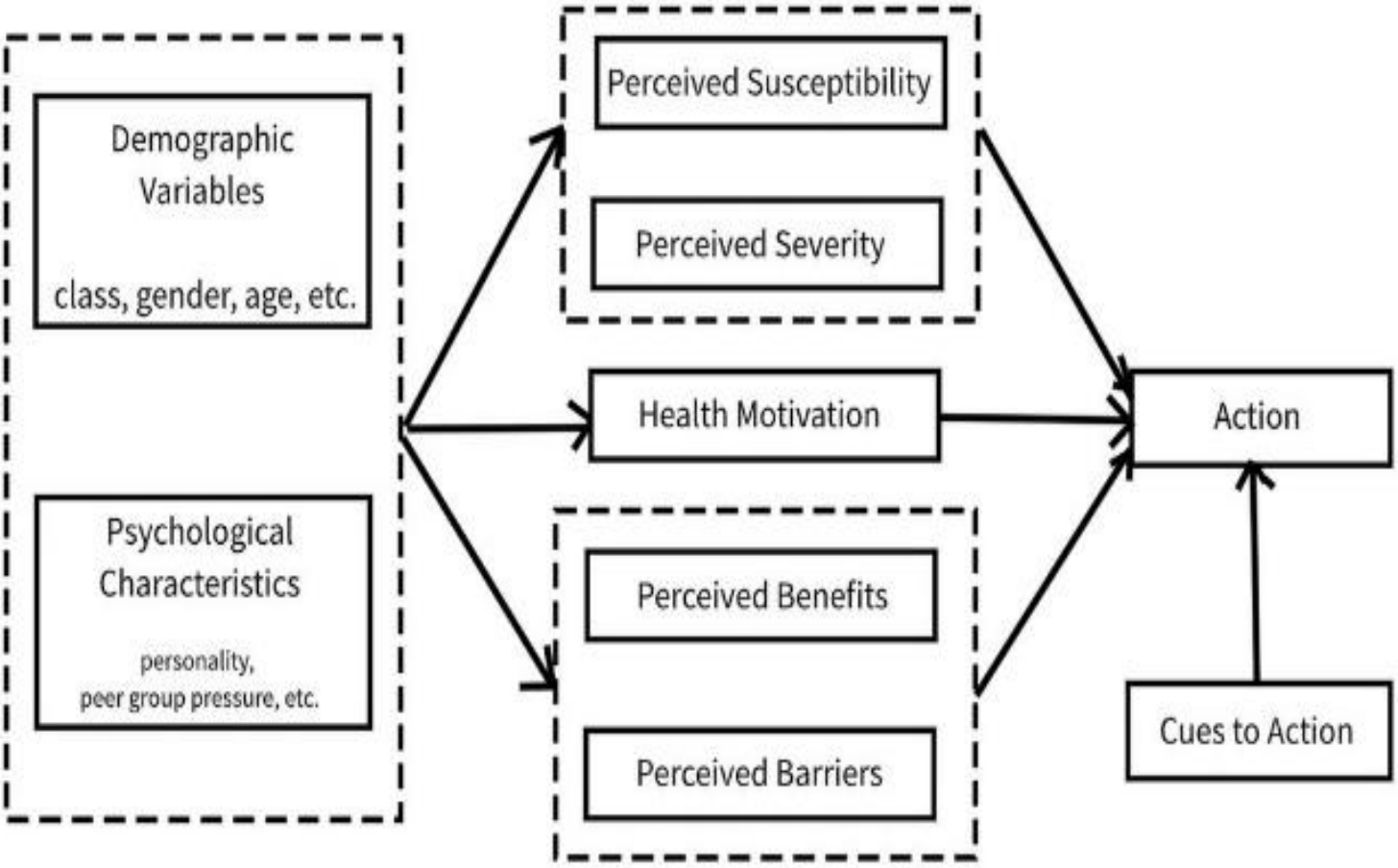

Figure 3: Health Belief Model

Figure 4 demonstrates the integrated theoretical framework guiding this concept paper.

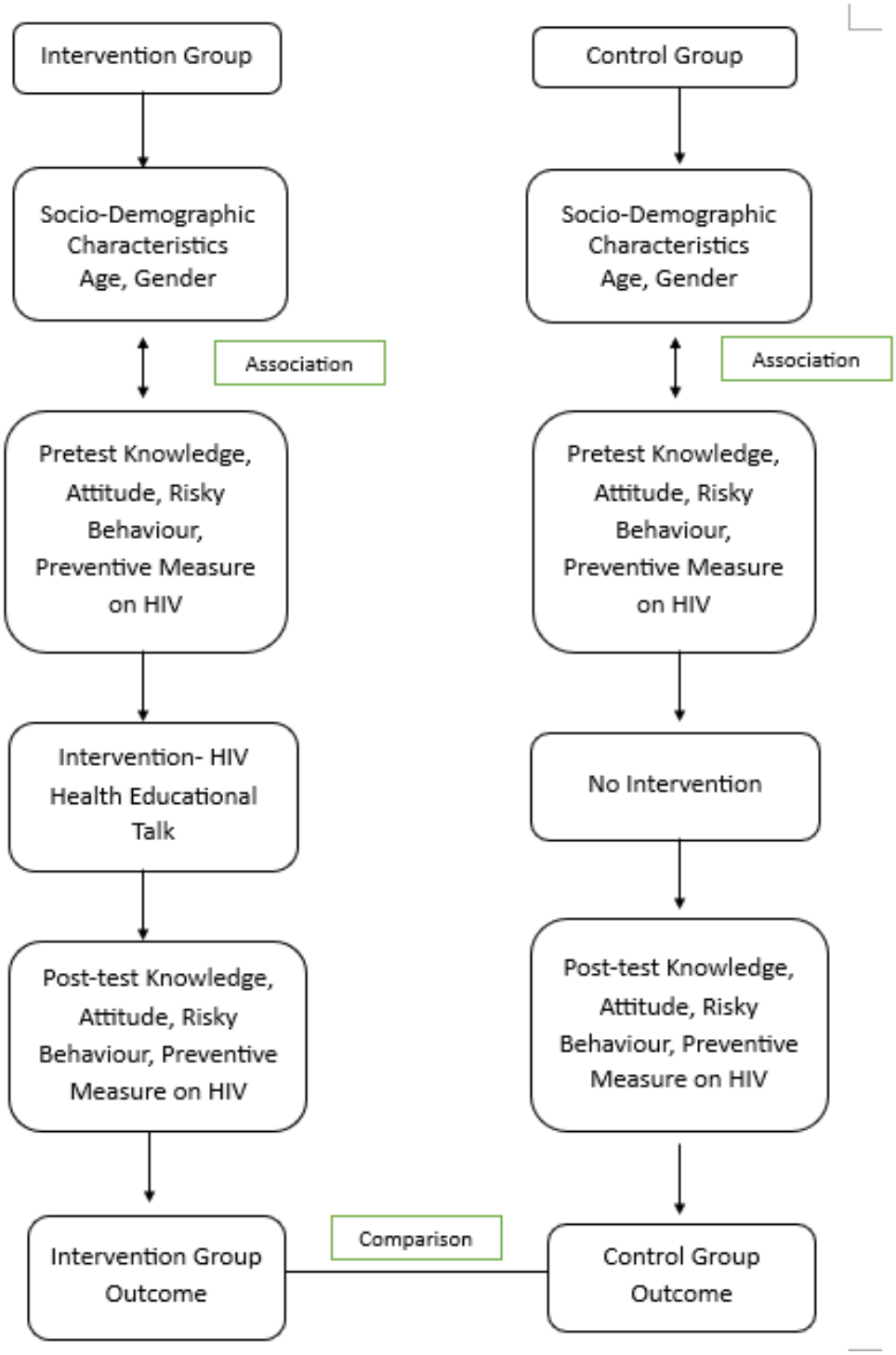

Figure 4: Integrated KAP–HBM Framework Related to HIV

Research Objectives

General Objective

To evaluate the effectiveness of a structured HIV health education, talk in improving HIV-related knowledge, reducing risky behaviors, and enhancing preventive measures among Malaysian university students.

Specific Objectives

1. To assess baseline levels of HIV-related knowledge, attitude, risky behaviors, and preventive measures among Malaysian university students.

2. To evaluate post-session levels of HIV-related knowledge, attitude, risky behaviors, and preventive measures among students who receive the structured HIV health education talk.

3. To compare post-session scores between the intervention and control groups to determine the effectiveness of the educational talk.

4. To examine associations between socio-demographic factors and students' baseline levels of HIV-related knowledge, attitude, risky behaviors, and preventive measures.

Research Questions

1. What are the baseline levels of HIV-related knowledge, attitude, risky behaviors, and preventive measures among Malaysian university students?

2. How do post-session scores of HIV-related knowledge, attitude, risky behaviors, and preventive measures differ among students who receive the structured HIV health education talk?

3. Is there a significant difference in post-session outcomes between the intervention and control groups?

4. What associations exist between socio-demographic factors and baseline scores on HIV-related knowledge, attitude, risky behaviors, and preventive measures?

Significance of the Study

Students

University students are at a formative stage of life where their sexual health decisions carry long-term consequences. By participating in this study, students gain reliable and practical knowledge on HIV transmission and prevention. The structured session will empower them to make safer choices, recognize personal risk, and engage in preventive behaviors such as consistent condom use and voluntary testing. Furthermore, the session encourages open dialogue and peer awareness, fostering a culture of responsibility and compassion toward people living with HIV.

Universities

The findings will provide universities with evidence-based insights into the current state of students' HIV knowledge and behavioral risk factors. Institutions can use these results to design targeted campus health programs and integrate short, structured health education modules into orientation or health-week activities. Conducting sessions led by qualified health professionals ensures accuracy, credibility, and impact in student learning outcomes.

Public Health Policymakers

The study contributes to Malaysia's efforts to achieve the UNAIDS 95–95–95 goals by offering practical data on the effectiveness of short-duration, structured interventions in university settings. The results can inform policy formulation under the Ministry of Health Malaysia's National Strategic Plan to End AIDS, highlighting how targeted educational interventions can reduce new infections among youth, a group that accounted for over 20% of recent HIV cases nationwide [1, 33].

Future Research

Few Malaysian studies have evaluated HIV prevention education using a quasi-experimental design. This research therefore adds to the limited body of evidence on the measurable impact of brief educational interventions. The findings can serve as a foundation for future longitudinal or cross-institutional studies examining sustained behavioral change, stigma reduction, and the long-term effects of similar programs among

young adults.

Empirical Evidence and Literature Review

A growing body of empirical literature has examined HIV-related knowledge, attitudes, risky behaviours, and preventive measures among youth and young adults across global, regional, and national contexts. While general awareness of HIV and AIDS tends to be high among university students, deeper analysis consistently reveals substantial gaps in knowledge accuracy, perception of risk, and engagement in safe sexual practices. These shortcomings are often influenced by cultural taboos, stigma, misinformation, and limited access to youth-friendly and confidential health services, which collectively undermine the effectiveness of existing HIV prevention strategies.

Globally, numerous studies highlight the prevalence of the knowledge-behaviour gap among youth. In Uganda, Akello et al. reported that while 80% of students had heard of HIV or AIDS, only 53% correctly understood key modes of transmission and prevention [2]. In Ghana, Arhin and Gyimah found that first-year university students generally supported HIV testing but demonstrated low awareness of asymptomatic infection and treatment adherence [3]. These findings suggest that superficial awareness is insufficient to change behaviour unless supported by deeper cognitive and attitudinal shifts.

In Southeast Asia, similar trends have been documented. Fana reported common misconceptions about non-sexual transmission, such as HIV spreading through casual contact, reinforcing stigma and fear [14]. A national study in Thailand by Liu et al. found that even among educated populations, HIV-related stigma persisted and remained a major barrier to voluntary testing [24]. Students' attitudes were shaped by religious teachings, moral judgments, and gender norms, influencing perceptions of risk and decisions about prevention [24].

In Malaysia, empirical data underscore the urgency of addressing HIV risk among university students. Surveillance reports show that from 2020–2024, over 1,000 university students tested positive for HIV, with 222 cases reported in 2024 alone [1]. Most occurred among males aged 20–29, the demographic most represented in universities [33]. The main mode of transmission continues to be unprotected sexual activity involving inconsistent condom use and low uptake of testing services [32, 20].

Studies conducted in Malaysian universities further support these concerns. Fatimah Sham et al. found that only 61% of undergraduates knew HIV is *not* transmitted through sharing utensils, revealing gaps in fundamental knowledge [13]. Fewer than half reported regular condom use. Che Hashim et al. found ongoing reluctance to undergo testing due to fear of judgment and confidentiality concerns [8]. These patterns indicate that knowledge acquisition has not translated into consistent protective behaviour.

Stigmatizing attitudes also continue to be a major barrier. JadKarim et al. demonstrated that negative attitudes toward PLHIV were associated with lower intentions to use condoms and avoid testing [20]. Moral or religious beliefs often contributed to the perception that HIV infection is a result of immoral behaviour, reinforcing silence and denial.

Behaviourally, many studies have documented risky sexual practices among students, even among those exposed to HIV education. Calderón et al. explained that knowledge alone does not change behaviour unless accompanied by self-efficacy, access, and social support [6]. This finding is consistent with Malaysian studies such as Chong et al., which found avoidance of testing despite understanding its importance [9].

Educational interventions have shown mixed outcomes. Peer-led programs improved knowledge and attitudes but had modest effects on behaviour change [9]. Digital interventions expanded access but often lacked emotional and motivational engagement.

There is increasing recognition that HIV prevention programs for university students must go beyond information-only approaches and adopt holistic, theory-driven interventions. Programs must consider not only what students know, but how they feel, how they perceive their vulnerability, and what real-world barriers they face. This study responds to that need by integrating the Knowledge–Attitude–Practice (KAP) model and the Health Belief Model (HBM) into a structured educational intervention tailored specifically to Malaysian

university students.

TABLE I

Theoretical Framework	Associated Authors	Study Focus Cluster
Knowledge, Attitude, and Practice (KAP) Model	Akello et al. (2023), Arhin and Gyimah (2021)	Global HIV awareness among youth
	Fana (2021), Liu et al. (2022)	HIV knowledge and stigma in Southeast Asia
	Fatimah Sham et al. (2020), Che Hashim et al. (2024)	HIV knowledge and behavior in Malaysian universities
	Chong et al. (2021)	Peer education impact on knowledge and attitudes
Health Belief Model (HBM)	Jad Karim et al. (2023)	HIV testing reluctance due to stigma and risk perception
	Calderón et al. (2015), Chong et al. (2021)	Risky behavior despite HIV knowledge
	Current Study (Concept Paper Proposal)	Justification for structured intervention

RESEARCH METHODOLOGY

Research Design

The study will employ a quasi-experimental pre-test and post-test design with a control group to assess the effectiveness of the intervention. Both groups will complete validated questionnaires before and two weeks after the intervention. The design enables comparison of changes within and between groups, identifying measurable improvements attributable to the educational session.

Participants

A total of 100 Malaysian university students, aged 18 to 30 years, will be recruited through purposive sampling. Participants will be equally divided into two groups:

- Intervention Group (n = 50): Will attend the structured HIV health education talk.
- Control Group (n = 50): Will not receive the intervention during the study period but will complete the same pre- and post-assessments.

Inclusion Criteria:

Malaysian undergraduates (Diploma/Degree), aged 18–30, able to read English or Bahasa Malaysia, willing to participate, and provide informed consent.

Exclusion Criteria:

Individuals previously diagnosed with HIV/AIDS, those who have attended similar HIV educational sessions in the past six months, or who cannot complete both assessments.

Instrumentations

1. Brief HIV Knowledge Questionnaire (HIV-KQ-18) – Carey & Schroder (2002)
2. Attitudes towards HIV are measured using the HIV Attitudes Scale (HIV-AS) developed by Gómez-Lugo et al. (2020).
3. HIV Risky Behaviour Questionnaire – Folasayo et al. (2017)

4. HIV Preventive Measures Questionnaire – Folasayo et al. (2017)

Each instrument demonstrates strong reliability (Cronbach's $\alpha \geq 0.70$). Instruments will be adapted for linguistic and cultural appropriateness for Malaysian students.

Intervention

The intervention comprises a single 4-hour educational talk delivered by the researcher, who is a nursing academic experienced in HIV education. The session will be conducted online via Google Meet, ensuring accessibility for participants from various universities. The content is evidence-based and designed to promote awareness, correct misconceptions, and empower behavioral change in line with the Health Belief Model such as perceived risk, benefits, and barriers and the KAP framework that links knowledge to practice.

TABLE II

Time	Session Component	Description
8:30 – 9:00 AM	Registration & Pre-Test	Participant sign-in and completion of pre-test (KAP questionnaire via Google Form). Orientation and housekeeping.
9:00 – 9:20 AM	Opening Remarks & Introduction	Welcome by moderator, overview of objectives, and speaker introduction.
9:20 – 10:00 AM	**Session 1:** Knowledge (Transmission & Risk Factors)	How HIV is transmitted and not transmitted, risk factors, and examples relevant to youth.
10:00 – 10:45 AM	**Session 2:** Attitudes	Exploring beliefs and stigma toward HIV and PLHIV, personal values, and the importance of empathy and support.
10:45 – 11:00 AM	Morning Break	Refreshments or short virtual break.
11:00 – 11:45 AM	**Session 3:** Risky Behaviours Among Students	Unprotected sex, drug/alcohol use, sharing needles, peer pressure, real-life cases.
11:45 – 12:30 PM	**Session 4:** Preventive Strategies	Condom use, regular testing, partner communication, accessing health services.
12:30 – 1:00 PM	Interactive Segment & Q&A	Myth-busting quiz, open/anonymous Q&A, stigma discussion, participant sharing.
1:00 – 1:15 PM	Conclusion & Summary	Recap of key points, reminders for post-test (after 2 weeks), and take-home messages.
1:15 – 1:30 PM	Closing & Acknowledgements	Thank you note to speaker and participants, photo session (if in person), and final announcements.

Data Collection Procedure

1. Pre-Test: Distributed via Google Form before the talk for both groups.
2. Intervention: Four-hour online session conducted by the researcher.
3. Post-Test: Two weeks after the session, the same questionnaires will be re-administered to both groups. Data will be coded anonymously to maintain participant confidentiality.

Data Analysis

Data will be analyzed using IBM SPSS Version 26:

1. Descriptive statistics (frequencies, mean, SD) to summarize demographic data.
2. Paired sample t-tests/Wilcoxon signed-rank tests to measure pre- and post-test changes within groups.

3. Independent sample t-tests/Mann–Whitney U tests to compare post-test outcomes between groups.
4. Chi-square and correlation analyses to examine relationships between socio-demographic factors and baseline variables.

A significance level of $p < 0.05$ will be considered statistically significant.

Ethical Considerations

Ethical approval will be obtained from OUM ethical committee and the respective universities ethics committees prior to data collection. All participants will provide informed consent, and anonymity will be maintained throughout. Data will be stored securely in a password-protected database and used strictly for academic research purposes.

CONCLUSIONS

This study aims to evaluate the effectiveness of a structured HIV health education talk in improving HIV-related knowledge, reducing risky behaviours, and increasing preventive actions among Malaysian university students. Using a quasi-experimental pre-test and post-test design, the research will provide valuable evidence on how short, focused educational programs when facilitated by qualified health professionals can contribute to behavioural change. The results will inform both campus-based initiatives and broader national strategies aimed at curbing HIV transmission among young adults in Malaysia.

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