



A Review on Medication Adherence on Antiretroviral Therapy in South East Asia

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ABSTRACT

As of 2018, receiving antiretroviral treatment (ART) was 23.3 million patients with HIV, with 2 million of those people coming from countries in South-East Asian nations, according to the WHO. According to the Center For Disease Dynamics, Economics, and Policy, South East Asia has the world's third-largest HIV pandemic as well as the highest TB burden, accounting for more than a quarter of all HIV infections. Numerous investigations have demonstrated how healthcare professionals may influence patients' medication-taking habits for the better if they persistently and frequently discuss the advantages of ART adherence at each annual checkup, monitor adherence-related clinical markers including viral load, identify adherence hurdles, offer adherence support services, and inform patients of additional therapies that can enhance adherence and lower the risk of problems. Because of varying social ramifications, a wide range of psychological traits, and cultural differences, it is challenging to evaluate Southeast Asians' adherence to antiretroviral medication. The researchers came to the conclusion that self-management, educational intervention, cognitive and adaptive abilities, peer support, and frequent clinic visits are the key characteristics that contribute to medication adherence to antiretroviral drugs in the majority of Southeast Asian nations. Southeast Asian nations suffer from societal consequences including discrimination and stigma, a lack of assistance from the government, and insufficient access to medicine and religion. The desire to continue taking the drug affects adherence to antiretroviral treatment. These claimed causes include forgetfulness, having a full schedule, being strapped for cash, avoiding side effects, and having trouble understanding directions. Given the aforementioned facts, successful management of antiretroviral medication adherence necessitates individual, social, and medical measures.

Keywords: HIV, AIDS, Antiretroviral Therapy, ART adherence,

Introduction

According to the Center For Disease Dynamics, Economics & Policy with more than a quarter of the world's HIV cases, South East Asia has the third-largest HIV epidemic internationally as well as the greatest TB burden [1]. Globally, nearly 24 million people who have HIV were getting antiretroviral medication (ART) as of 2018, with 2 million of those individuals coming from nations in the WHO South-East Asia Region [3]. Antiretroviral therapy (ART) is recommended for all HIV-positive citizens irrespective of CD4 cell count in order to steadily lower viral load, maintain high CD4 cell counts, avoid AIDS, extend survival, and reduce the chance of HIV transmission toward others. However, research shows that the degree to which a patient adheres to their medicine in accordance with recommended dosages, durations between medications, and any prescription directions will determine how well ART works for them. Numerous studies have demonstrated that healthcare professionals can have a positive influence on patients' medication-taking habits if they regularly and persistently discuss the advantages of ART adherence at every office visit, monitor clinical indicators that are affected by adherence, such as infectivity, identify adherence challenges, provide adherence support services, and inform patients about additional treatments that improve adherence and reduce the risk of developing side effects.[2]

The introduction of highly active antiretroviral therapy (HAART), multidrug regimens, and antiretroviral therapy has significantly increased HIV-positive individuals' chances of survival. However, these drug regimens are intricate. This makes sustaining adherence over the long term difficult, combined with concerns about toxicity, side effects, disruptions to the patient's daily routine, and difficulties returning for frequent follow-up sessions are all possible outcomes. The advantages of ART for both personal and societal health, however, depend on adherence. Due to insufficient adherence, antiretroviral drugs are not kept at levels high enough to prevent HIV proliferation in infected cells and plasma viral load reduction. Furthermore, noncompliance can hinder ART's ability to reduce HIV incidence and transmission while also hastening the emergence of drug-resistant HIV. Adherence promotion is essential as these medications become more accessible and cost-effective for PLHIV in underdeveloped nations as virologic control is usually impossible. As a result, adherence-related issues are receiving increased attention.[4]

The goal of this research review is to evaluate the levels of compliance to antiretroviral therapy and the determinants of adherence among HIV-positive individuals in South East Asia.

Methods

This study reviews medication adherence on antiretroviral therapy in Southeast Asia and the collection of information from academic journals for reference was based on databases that are publicly available on the internet including PubMed, ScienceDirect, BMC Research Notes, and Google Scholar. On October 3, 2022, the article search was initiated in order to properly measure antiviral treatment adherence in different Southeast Asian countries. This article review includes articles that are determined to be timely published from 2010-present and certainly relevant to the subject of the study.

Results and Discussion

Table 1. Factors Influencing Antiretroviral Treatment in Southeast Asian Countries

Country	Author and Year	Methods	Results	Factors Influencing Antiretroviral Therapy
Burma (Myanmar)	Mar, H.T. (2015).	Adults with HIV in Myanmar cities were given questionnaires to assess adherence and its contributing factors, such as HIV education, socialization, treatment barriers, committed and emotional maltreatment, and participation in peer-to-peer HIV therapy are all factors to consider. The logistic mixed-effects modeling was used to find the associations.	The average age of the 956 participants was 39 years, 52% were female, 36% had CD4 350 cells/mm ³ , and 50% got pre-ART PC. 74% of participants with good HIV understanding than some of those reporting nonadherence reported good adherence. Nonadherents were 44% forgetful and 81% irresponsible about taking ART. Most (53%) of the participants were highly happy with their social help, while 79% indicated an insufficiency of funds as a barrier to care. Individuals were much more likely to report being considered separately by anyone else (30%) and feeling as though they were repaying for previous karma or misdeeds (66%). Ingrained social ostracization (odds a ratio of 0.73; 95% confidence level: of 0.56 to 0.95, P = 0.023) was linked with lower adherence.	Stigma and prejudice were shown to be the most significant barriers to ART adherence. These factors contribute to delayed HIV release of information and an absence of social assistance. Some ART clinics stigmatized and discriminated against PLHIV and KAP patients. According to the findings of Indian research, one of the primary causes for missing doses among PLHIV is forgetting to take the medication, and also another cause is always being busy with social events, which reflects the avoidance of taking medicine in the presence of other people, for fear of stigma and prejudice. The data indicate that stigma and discrimination have an influence on the work chances and wages of PLHIV in Myanmar, reducing adherence indirectly. Even though the Myanmar NAP delivers ART for free, customers incur indirect expenses, which reduces ART adherence[5].

Cambodia	Madec, Y., Laureillard, D., Pinoges, L., Fernandez, M., Prak, N., Ngeeth, C., ... & Fontanet, A. (2007)	The causes of mortality and immunological reconstitution may be determined, respectively, utilizing Cox symmetrical risks models and multinomial logit models.	1735 individuals started HAART from July 2001 and April 2005, with an interquartile range of 20–78 cells/l for the median CD4 cell count.. As the CD4 cell count dropped at the commencement of HAART, mortality after 2 years rose (4.4, 4.5, 7.5, and 24.7% in patients with CD4 cell counts more than 100, between 51 and 100, between 21 and 50, and between 20 cells/l, respectively; P 104). As long as the respective CD4 cell counts were lower than 200 and 100 cells/l, Fluconazole and cotrimoxazole prophylaxis were effective at preventing mortality. It was lower in individuals who had previously undergone ART (ratio (OR), 0.16; 95 % confidence (CI), 0.05-0.45) and in those who experienced a novo infection/reconstitution of the immune system(OR, 0.71; 95% CI, 0.52-0.98). At six months, 46.3% of patients had effective immune reconstitution (CD4 cell increase > 100 cells/l). In terms of mortality and successfully regenerating the immune system, the fixed dosage combination of stavudine-lamivudine-nevirapine and the combination of stavudine-lamivudine-efavirenz were shown to be equally effective. Hemoglobin, body mass index, weight, and total lymphocyte count could not be shown to be surrogate indicators for CD4 cell change.	Although individuals with CD4 cell counts more than 50 cells/l have higher CD4 cell count-stratified mortality rates comparable to those seen in developed nations, patients with CD4 cell counts of 20 cells/l posed a serious challenge to medical professionals. To enable the start of HAART before the onset of severe immunosuppression, it should be urged to promote counselling and widely available voluntary HIV testing [6].
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	Barenes, H., et al. (2016)	<p>From February to July 2013, case-control research was undertaken among children with HIV-1 infection (aged 1 to 15 years) receiving first-line (matched controls at a 1:3) or second-line (cases) ART regimens at the National Pediatric Hospital. Those with an HIV-1 RNA plasma viral load (VL) result included children for the earliest available 12 months. The sociodemographics of the family, HIV history, and ART adherence were surveyed using a standardized questionnaire. The connections between the children's characteristics and VF (HIV-1 RNA levels of 1000 copies/ml) were investigated using bivariate and multivariate analysis.</p>	<p>There were 232 total enrolled children, 175 (75.4%) of whom received first-line ART, and 57 (24.6%), second-line ART for a median of 72.0 (IQR: 68.0-76.0) months. 51 (22.0%) single orphans, 94 (40.5%) double orphans, and 77 (33.2%) lived in orphanages. 222 kids altogether (95.6%) were found to be ART adherent. Four patients (7.0%; 95% CI 1.9-17.0) received second-line ART, whereas 14 patients (8.6%; 95% CI 4.8-14.0) received first-line ART for a total of 18 patients (7.7%; 95% CI 4.6-11.9) with VF (p = 0.5). When ART first began, their 8% was the median CD4 percentage at the beginning of ART (IQR 2.9-12.9). The final control showed lower CD4 cell counts in second-line ART patients, who were also older and more frequently double orphans.</p>	<p>Children on ART present serious issues in areas with few resources. They must first undergo lengthy treatment with unknown long-term negative effects. Second, poor dosage recommendations for particular antiretrovirals (ARVs), age groups, and pediatric formulations might lead to inadequate plasma drug levels. Third, there is a reduced percentage of treatment compliance among these children, especially among teens. All of these elements may cause HIV medication resistance to develop quickly (HIV DR)[7].</p>
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Indonesia	Suryana K, Suharsono H, Antara IGPJ.(2019)	Between January 2015 and December 2017, 202 PLWHA who had been on art therapy for at least six months underwent a cross-sectional study. The subjects were subjected to semi-structured questionnaire interviews to learn more about their sociodemographic traits. Data analysis was carried out using the SPSS program for Windows, version 24.0. A chi-square test was conducted, and it was determined that a precision of 95% ($p < 0.05$) was statistically significant.	202 PLWHA were known to be taking an antiretroviral therapy; of them, 170 (84.16%) shows good adherence (95%) and 32 (15.84%) had low adherence (95%). Parental support ($p < 0.001$), type of ARV (due to ART side effects) ($p = 0.002$), and job status($p = 0.011$) were found to be positively associated with good adherence to ART.	When it comes to treating serious diseases, like HIV patients, Compliance is a serious issue. One aspect that contributes to ART's success is the patients' capacity to adhere to specific instructions for dose interval associated to taking Antiretroviral therapy on a routine basis. Parental support makes patients feel better about themselves, which makes it easier for them to remain with ART and believe they will live a long, healthy life. However, if a patient lacks family support, it might be difficult for them since they feel hopeless, are more likely to reject their therapy, and have low adherence. This study found a statistically significant positive correlation between family support and ART adherence. In this study, it was determined that adherence to ART was unaffected by age, sex, education, or place of residence.[8].
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Laos	Hansana, V., et al. (2013)	<p>Persons with HIV getting free antiretroviral treatment at Savannakhet provincial hospital in the capital Vientiane from June to November 2011 were studied through cross-sectional research. 346 of them were interviewed with the use of an anonymous survey questionnaire. Based on the PLHIV's disclosure of their medication use during the preceding three days, the adherence rate was estimated. For data analysis, Stata 10.1 and Epidata 3.1 statistical programs were utilized. Each variable's frequencies and distribution were estimated using traditional statistical techniques. The Mann-Whitney test, chi-square test, and logistic regression were used in bivariate analysis. To identify the factors that predict ART non-adherence, multivariable logistic regression analysis was utilized. Statistical significance was defined as a p-value of 0.05 or lower.</p>	<p>60% of the 346 patients showed adherence to ART of greater than 95%. Being busy (97.0%) and forgetfulness (62.2%) were given as causes for not taking medication as directed. In the multivariate analysis, a lack of adherence was independently correlated with having completed secondary school (OR=3.7, 95% CI:1.3-10.1, p=0.012), using illicit drugs (OR=16.1, 95% CI:1.9-128.3, p=0.011), disliking exercise in general (OR=0.6, 95% CI:0.4-0.9, p=0.028), and failing to take ARV medicine within the previous month (OR=2.3, 95%</p>	<p>According to reports, 39.1% of PLHIV patients did not take their medicine and dose as directed. Busyness and forgetfulness were attributed as the major causes of non-compliance having a total percentage of 97.0% and 62.2% respectively. 43 respondents (12.4%) stated that they had missed at least one medical consultation. This was attributed to being too busy (41.9%), lacking transportation funds (32.6%), or the health center's location from their home (27.9%). Patients who reported experiencing adverse effects from their medication totaled 198 (52.3%). The majority of these symptoms, numbness (32.6%), a headache or feeling dizzy (34.3%), and a rash (42%), were experienced by people. Furthermore, bivariate analysis results showed a statistically significant relationship exists between age and nonadherence in the 36 to 45 age range in comparison to those under 35 and those over 46 (p=0.019). Additionally, it was shown that there is a statistically significant relationship (p=0.008) between secondary school graduation and non-adherence. Patients who had been in the study for more than 60 months exhibited statistically substantially higher adherence than those with 0-60 months (p=0.045). It was also discovered that using illegal drugs was statistically substantially linked to non-adherence (p < 0.05), not engaging activity (p=0.025), or not taking ART medication within the previous month (p < 0.001)[9].</p>
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Malaysia	Ahmed, S. I., et al. (2018)	A pretested interview guide was used to conduct in-depth interviews with patients who had been carefully chosen for the study. The 13th interview was when saturation was attained. Each interview was recorded on audio and transcribed verbatim for thematic content analysis.	Ten (10) theme clusters were extracted from the study and it was divided into two (2) emergent themes, namely: reasons for non adherence and ways to improve adherence. It was concluded that one of the main causes of non-adherence was fear of the stigma associated with an HIV diagnosis, lack of knowledge about the illness, a lack of community support, and the perception that the adverse effects of the medication were severe. Reduced pill burden, appropriate education, and motivation from the doctors were indicated as ways to increase adherence.	The factors indicated to increase adherence included self-management, peer and community support, and educational interventions. This calls for finding effective techniques to improve doctor-patient communication as well as acknowledging the importance of support groups for the patients' social and psychological wellbeing[10].
Philippines	Torres, R. Pacquiao, D., Ngaya-am, F., & Tuazon, J. (2021)	The study used a descriptive, cross-sectional study design. Following moment in time those who interacted directly with participants during course enabled participant engagement then questionnaire delivery by sampling 225 PLHIV at a single treatment hub over a period of time in the NCR of the Philippines. Descriptive and inferential statistics with STATA 14SE is utilized evaluated variables related to adherence to ART and planned clinic visits. Separate analyses were done on the qualitative replies.	Participant adherence to ART was greater compliance to regular clinic appointments (72.0%) than (91.0%). Monitor adherents waited at the clinic for an average of more minutes before obtaining ART than did visit sub-adherents, who received an average length of treatment from the clinic that was considerably shorter (M equivalent to 2.1, SD equivalent to 1.6, p equivalent to .05) and above (M equivalent to 42.1, SD equivalent to 43.0, p equivalent to 02). The main causes of non-adherence to ART and regular clinic appointments were time and activity restrictions. Most of the time, individual and healthcare-level factors both facilitate and hinder adherence habits.	Participants in the research were observed to adhere to ART more frequently during the initial phase of therapy than during regular clinic visits. Given that clinic visits provide opportunities for ongoing screening and evaluation of PLHIV, lessening adherence to regular clinic appointments may have long-term effects on adherence to ART. According to Pender's Health Promotion Model, which holds that adherence behaviors are impacted by a person's talents, qualities, experiences, needs, and preferences as well as by social, situational, and environmental variables, the study's findings confirm and reflect these beliefs[11].

	Chih, M. K. R. U. H., Chang III, E. M. M. V., Valeroso, E. R., Valiente, R. A. T., Yadao, R. R. S. P., Sabri-na, S. Y., ... & Yu, P. J. C. (2017)	To record the wellness and actions of individuals associated with a Quezon City health center, a cross-sectional survey design was employed. Participants responded to an online survey that included the WHO-QOL for HIV, the HIV Prevention and treatment Compliance Self Efficacy Scale also Berger HIV Discrimination Scale. Prevalence risk ratios bivariate studies were carried out to evaluate the connections among certain biopsychosocial variables and treatment adherence and quality of life.	Analysis of 100 responses revealed that weak CD4 cell levels of 42% (350 cell lines), strong CD4 cell levels of 43% levels of social then self-stigma, 36% had low ATT, 7% used to have a poor ATT, and 11% experienced poor Well-being. CD4 cell count, self-stigma, and societal stigma did not significantly affect quality of life or treatment compliance.	Poor QOL was shown to be inversely correlated with low CD4 cell counts and greater levels of social stigma in individuals, although these correlations were not statistically significant. Poor ATT and the chosen biopsychosocial variables did not significantly correlate [12].
Singapore	Chow, K.Y., et al. (2005)	The researchers conducted a retrospective analysis of 790 HIV-positive individuals between May 16, 1985, and December 31, 2001. Although CD4 cell counts were not included as a criterion, the endpoint was the emergence of an AIDS-defining disease as indicated from updated CDCP criteria from 1987 then 1991. AIDS-free survival curves were drawn using the Kaplan-Meier technique for age categories at diagnosis, initial CD4 counts, and antiretroviral medication use intervals. In order to identify independent determinants of illness development, a Cox regression model was built.	According to a univariate study, patients who were older at diagnosis had a considerably higher risk of advancement than patients who were younger, and patients whose CD4 cell counts were higher at baseline had a reduced probability of developing AIDS. When multiple covariates' simultaneous effects on the rate of HIV progression to AIDS were taken into account, multivariate analysis using the Cox model revealed that older patients having a noticeably increased rate of progression upon diagnosis, and that risk decreased over time as baseline CD4 cell counts rose.	When establishing clinical management, counseling prevention, and treatment methods, it's critical to comprehend the HIV infection's natural development. In this research cohort, the impact of age upon diagnosis was evident, with those who were older progressing to AIDS at a higher rate. This result supports a number of research that shown that getting older predicts a quicker progression. Age upon diagnosis was correlated with low CD4 counts, suggesting that older individuals or late presentations may have a fast drop in this lymphocyte subset. According to research showing an inverse relationship between the patient's age and the ability to make new CD4 cells following chemotherapy, this decline may be caused by a decline in thymic activity [13].

Thailand	Li, L., et. al. (2010)	<p>baseline information out of a randomly controlled family intervention experiment aiming to enhance PLH's standard of living in northern part of thailand then northeastern regions are used in this study (Lee et al. 2009) Four district hospitals in the two districts provided the information that was gathered in 2007. (two district facilities per area).When receiving medical care at the experimental hospitals, the PLH were enrolled. Hospital workers informed PLH of the experiment, and prospective individuals were introduced to the research team. The study's purpose and procedure were introduced by research experts specifically employed for the project. Written informed consent was acquired after PLH freely decided to participate in the study.</p>	<p>Antiretroviral medication has made HIV infection a chronic, curable illness. However, successful therapy and long-term viral suppression necessitate strict adherence to specified regimens. According to our findings, adherence to ART remains a substantial difficulty in Thailand. About 69% of ART participants exhibited adequate adherence; the true adherence rate could be lower if desirability bias is taken into consideration. 49 (40%) of the 121 PLH who reported ART noncompliance done so within the previous month. In Thailand, ART-related problems are expected to worsen. Assessment of virologic response and ART resistance is essential due to the large number of treatment-experienced inpatients in Thailand. (Maneersriwongul et al., 2006).</p>	<p>49 (40.5%) of the 121 PLH who disclosed ART noncompliance did so during the previous month. The most of PLH (78%) who stated that they had not taken the ART in the previous month had simply not remembered to take it (Table 2). The fear of social stigma if their HIV status was revealed led one-fifth of the PLH (18%) to declare that they did not adhere. Other factors mentioned included difficulty finding a medical professional (6%), running out of medication (6%), not comprehending the prescription or believing the medication would still not help (6%), and becoming too ill to have care facility medication (4%)[14].</p>
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	<p>Xu, L., Munir, K., Kanabkaew, C., & Le Coeur, S. (2017)</p>	<p>The variables impacting adherence among teenagers in Thailand who were exposed to the infection during pregnancy were determined by the researchers using both quantitative and qualitative methods. Data from 568 pairings of teenagers (ages 12 through 19) who were perinatally infected and their primary caregivers were evaluated in the Teenagers Living With Antiretrovirals (TEEWA) experiment, a cross-sectional study performed from 2010 to 2012. We also conducted Twelve in-depth discussions with infected teenagers or their primary caregivers in 2014 to find out more about the realities of living with long-term ART.</p>	<p>A total of 275 adolescents (48.4%) were found to have evidence of unsatisfactory adherence, according to the quantitative analysis, based on this composite outcome of adolescents who self-reported missing doses in the previous week, caregiver judgments of overall adherence as suboptimal, or most recent HIV-RNA viral load of 1000 copies/ml. Multivariate logistic regression study found significant relationships between inadequate adherence and younger age, having grandparents or other extended family members as the primary caretaker, being in a relationship, frequent online communication, self-reported dissatisfaction, having a boyfriend or girlfriend, and ease in asking doctors questions. According to the in-depth interviews, poor adherence was often caused by unfavorable relationships with caregivers, forgetfulness spurred on by busy schedules, and the fear of disclosing one's HIV status to others, especially lovers and girlfriends. Peer group therapy and social and emotional support have often been cited as powerful adherence-promoting elements.</p>	<p>The results of the study, which used respectively quantitative and qualitative methods, demonstrated the importance of personal and interpersonal psychosocial factors in ART adherence, particularly in terms of the adolescents' expressed level of happiness, relational distance from important caregivers, and cognitive and adaptive abilities to tolerate the discomfort in their relationships with boyfriends/girlfriends or doctors. Clinicians may be able to provide more effective treatment for adolescents who are most vulnerable to poor compliance if they are conscious of the factors influencing ART compliance, as demonstrated by this article. Because the current ART regimen major efforts medicine for antiretroviral therapy, more intimate and consistent caregiving relationships are required for age-appropriate psychological, emotional, and cognitive support throughout the lifespan[15].</p>
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	Phuphanich et al., 2020	A convenience sampling technique (n=21) of patients visiting normal clinic visits at HIV-NAT, the Thai Red Cross AIDS Research Center in Bangkok, or Srinagarind Hospital in Khon Kaen were subjected to semi-structured interviews.	The informants' average age ranged from 27 to 60 years, and 43% of them were women. The researchers discovered significant enablers and impediments to adherence among HIV-positive Thai patients along three primary themes (patient-related, health system-related and medication-related). The majority of interviewees voiced worry about stigma, which permeates the Thai community and works to instil a sense of guilt in Thai people living with HIV. Their commitment to maintaining their health and incorporating cART improved compliance with their daily routine. Patients were able to maintain strong drug adherence due to supportive and trustworthy interactions, particularly with the clinic team.	The barriers to good adherence identified in the study was the stigma, medication accessibility and affordability, Karma, family duties, Buddhism, having links and social networks, and being equipped[16].
	Tran et al., 2013	1,016 HIV/AIDS patients from seven hospitals and health facilities throughout three provinces, including Hanoi, Hai Phong, and Ho Chi Minh City, participated in cross-sectional research, that provides antiretroviral treatment services. To evaluate self-reported medication compliance, a 30-day visual analog scale (VAS) and 7-day untaken dosage questionnaires were employed.	The mean adherence VAS score ranged from 40 to 100% and was 94.5 out of 100 (SD=8.2). Poor adherence occurred at a rate of 25.9%. Untaken dosages occurred at a rate of 25.2%. In a multivariate analysis, greater CD4 levels, being unmarried and having a precarious job were associated with ideal compliance; higher CD4 levels, unmarried status, and unstable work were related to poor compliance.	Working, failing to prepare prescriptions, skipping doses, and travelling were all factors that contributed to poor adherence to ART. Non-adherence was found to be substantially linked with the kind of occupation, profession, faith, civil status, and physiological condition[17].

Vietnam	Le, P. M., Nguyen, P. T., Nguyen, H. V., Bui, D. H., Vo, S. H., Nguyen, N. V., ... Gilmour, S. (2021)	Results from a cross-sectional survey of HIV patients (PLWH) in Vietnam in 2017 were utilized in this study. A quick, easily accessible, and the cost-effective sample was obtained for the survey by using the convenience sampling method. The Vietnam Authority of HIV/AIDS Control's case reporting protocols were used to recruit participants (VAAC). The main indicator of HAART adherence was the individuals' self-reported adherence to prescription medications over the 30 days prior to the interview. A dichotomised factor was used to classify the compliance issues, with adhering to HAART being defined as taking more than or equal to 90% of the advised dosages and non-adherence to HAART as consuming under 90%.	Non-compliant PLWH (11.5%) were potentially to have more sexual partners (p-value = 0.053), engage in sexual activity without the use of a condom (p-value = 0.007), and not obtain an outcome at a clinic or unforced test base (p-value = 0.001). Several logistic regression analyses revealed that sexual risk behaviors (having multiple partners and having sex without the use of contraceptives) and scientific factors (time and location at which the first HIV-positive result was acquired) were related to HAART non-compliance. Women and men have different levels of education and locations for HIV testing, respectively, as well as other connected characteristics (multiple sex partners). Adherence may be helped by sexual identity activities, modifying dangerous behaviors, and minimizing harm among PLWH.	11.5% of the sample as a whole indicated non-adherence, which is a significant percentage. The findings highlight the crucial significance of scientific aspects and health assistance, particularly the time and location of the participant's first HIV test at which they received a positive result, in PLWH in Vietnam's non-adherence to HAART. The amount of time from the initial HIV-positive test is a factor that is equally associated with both. These findings imply that in order to attain greater efficacy, coming HIV/AIDS therapies and initiatives should be specifically and independently created for females and males[18].
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Conclusion

Adherence of Southeast Asians to antiretroviral therapy is difficult to assess due to different social implications, diverse psychological characteristics, and culture. However, the researchers collated factors that significantly affected the adherence to the therapeutic regimens and were able to present the following conclusions:

1. The researchers were able to conclude that the positive factors attributed to medication adherence on antiretroviral agents in most Southeast Asian countries are as follows: self-management, educational intervention, cognitive and adaptive abilities, peer support, and frequent clinic visits.
2. Southeast Asian countries are negatively affected by social implications such as stigma and prejudice, lack of governmental support, and insufficient supply of medication and religion. Health intervention compliance is also impacted by an individual's motivation to continue the medication. These cited factors include forgetfulness, a busy schedule, financial burden, avoidance of side effects, and difficulty comprehending instructions.

With the conclusions aforementioned, antiretroviral drug adherence management success requires personal, societal, and healthcare interventions.

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