



Health Seeking Behavior to the Development of Public Policy for HIV Predicting Model

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ABSTRACT

This study provides a comprehensive examination of the socio-demographic profiles and health-related behaviors among people living with HIV (PLHIV) to develop a predictive model for out-of-care (OOC) HIV patients. The increasing prevalence of HIV among certain demographics necessitates innovative approaches to prevent loss of retention in care. The objectives were to investigate the health-seeking and health maintenance behaviors among outpatient PLHIVs, to evaluate adherence to existing policies, and to develop the BUCAL Framework for predicting and preventing OOC status. Employing logistic regression analysis, the study analyzed factors such as age, gender, education, occupation, years since diagnosis, and adherence to Antiretroviral Therapy (ART). The results revealed significant predictors of OOC status, with high adherence to treatment, awareness of HIV care facilities, and factors related to the Department of Health Administrative Order No. 2022-2024. The findings culminated in the proposal of a comprehensive framework encompassing health-seeking behaviors, understanding patient profiles, retention of care, a predictive model, anticipation of control, and loss prevention. The conclusion emphasizes the importance of the developed framework in predicting OOC status and the necessity of targeted interventions for the effective management of HIV.

Keywords: Public Health; HIV, Antiretroviral Therapy, adherence, predictive modeling; Logistic regression, socio-demographic analysis; Philippines

1. Introduction

Global and Regional Context

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) continue to pose serious public health challenges across the globe. Despite progress in medical treatments and preventive measures, HIV/AIDS remains an alarming health concern, particularly in regions such as South Asia. The escalating rate of HIV infection has necessitated increased efforts to manage the epidemic, with a specific focus on understanding and addressing the underlying health-seeking behaviors and their influence on the development of an HIV predictive model (Embleton et al., 2023; Sok et al., 2020).

Health-Seeking Behavior and its Implications

A substantial concern is the lack of awareness about HIV among infected individuals, particularly in recognizing early symptoms. Traditional health-seeking behaviors such as seeking guidance from spiritual or religious healers often precede medical attention, leading to delayed diagnosis and effective treatment (Sok et al., 2020). This limitation creates diverse HIV-related complications, increasing the financial burden on the individual and their family and posing a barrier to receiving adequate medical care (Khadka et al., 2022). Furthermore, the Out-of-care patient rate within the HIV cascade aggravates clinical outcomes, thereby impeding control over the HIV epidemic (HIV.gov, 2021).

Research Gap

While existing literature has explored the socio-cultural factors impacting healthcare-seeking patterns, there remains an acute deficiency in comprehensive research examining the relationship between health-seeking behaviors and the development of an effective predictive model for HIV. The existing gap emphasizes the need to explore how specific health-seeking behaviors contribute to Out of Care (OOC) status among HIV patients.

Objective of the Study

The principal objective of this study is to discern the factors within individuals' health-seeking behaviors and health maintenance behaviors that contribute to their OOC status, enabling the creation of an HIV predictive model. This model will aim to accurately predict HIV patients who are more likely to disengage from care, thereby providing targeted insights to reduce treatment failures, improve patient retention, and enhance overall HIV care outcomes.

Specifically, the study will seek to answer the following questions:

What is the socio-demographic profile of the respondents in terms of:

Age

Gender

Civil Status

Highest Educational Attainment

Occupation

Years Being Diagnosed

Years of Using ART

Stoppage of ART usage for 30 days or more

To what extent are health-seeking and health-maintenance behaviors observed among outpatient PLHIVs?

To what extent are health-seeking and health maintenance services implemented based on existing policy guidelines?

To what extent of the impact does the profile of patients affect HIV retention to care, viral suppression, and prevention of out-of-care patients?

Based on the findings, what policy instrument can be proposed for the implementation of an HIV predicting model to prevent Out of Care HIV patients?

Background of Health-Seeking Behavior and Challenges in HIV Treatment

Understanding health-seeking and health maintenance behaviors is pivotal for the control and treatment of HIV. A significant number of patients show delayed healthcare-seeking patterns, leading to a higher risk of community transmission (Shi et al., 2020). The current healthcare policies, infrastructure, and socio-demographic profile of HIV patients contribute to the complexity of improving health-seeking behaviors and adherence to treatment (Chirambo et al., 2019). Various factors such as age, gender, education, socioeconomic status, and cultural norms create disparities in healthcare access and retention to care, further exacerbating the situation.

Background of Health-Maintenance Behavior

Health-maintenance behavior, a critical aspect of managing HIV/AIDS, refers to the actions taken by individuals to sustain their health once diagnosed with the disease. This encompasses regular medication intake, attending follow-up appointments, and adhering to prescribed treatment plans. The literature highlights ongoing challenges in this area, with reports indicating that a substantial number of HIV patients face difficulties in accessing essential antiretroviral medicines and consistent treatment (Chirambo et al., 2019). The barriers in health-maintenance behavior, such as limited resources, social stigma, psychological factors, and systemic obstacles, contribute to suboptimal health outcomes and require targeted interventions.

DOH Guideline DOH AO No. 2022-2024

In response to the intricacies of managing HIV/AIDS, the Department of Health (DOH) has issued guidelines through DOH AO No. 2022-2024. These guidelines aim to standardize the implementation of health-seeking and health-maintenance services for HIV patients. The directive focuses on enhancing access to healthcare services, improving the quality of care, and bridging the gaps between policy and practice. However, the translation of these policy guidelines into actionable measures faces challenges, such as inadequate infrastructure, limited resources, and insufficient training of healthcare professionals. Addressing these limitations is imperative for ensuring an effective, coherent, and equitable approach to HIV care.

Significance of the Study

This research holds immense potential to provide a comprehensive understanding of the health-seeking behaviors of HIV outpatients. The study's findings will serve as a foundation for theoretical frameworks and curriculum recommendations benefiting medical practitioners, policymakers, and HIV outpatients. By aligning with development goals for HIV treatment and fostering compassion towards people living with HIV (PLHIV), this study aims to contribute to improved healthcare services and the broader community's welfare.

The prevalence of HIV/AIDS and the complexities surrounding healthcare-seeking behaviors in South Asia emphasize the necessity of an in-depth examination of these behaviors. A nuanced understanding of the health-seeking patterns, implementation challenges, socio-demographic factors, and the development of a predictive model for HIV can lead to transformative changes in HIV treatment and control. This study aims to fill a crucial research gap, providing insights and strategies to enhance the overall quality of HIV care and contribute to the global fight against this persistent epidemic.

2. Methodology

Research Design

The methodology of this research embodies a combined descriptive-regression approach within an observational context. Initially, the descriptive part of the study, akin to a cross-sectional design permits simultaneous examination of health-seeking behaviors (the outcome) and various factors influencing these behaviors (the exposures). Although this design offers valuable prevalence data, it does not infer causation, focusing instead on correlation.

The research employed the descriptive design to estimate the prevalence of the disease and to gain insights into the health-seeking behaviors among HIV patients. Odds ratios were estimated to explore the associations between exposures and outcomes, aiding in the development of an HIV prediction model. The limitations in establishing causal relationships were acknowledged.

Following this, regression analysis was implemented to scrutinize the relationships between independent variables (such as health-seeking behaviors, socio-demographic factors, and healthcare environment) and the dependent variable (likelihood of being out of care). This analysis identified specific factors or combinations contributing significantly to the prediction of being out of care.

Combining both descriptive design and regression analysis allowed a comprehensive examination of the factors influencing the likelihood of being out of care among HIV patients, supporting the development of a predictive model for guiding interventions and enhancing patient outcomes.

Population and Sampling Technique

A non-probability purposive convenience sampling technique was utilized, with the target population comprising 65,236 people living with HIV (PLHIV) on antiretroviral therapy from January 1984 to February 2023. The sample size, 382 participants, was calculated using the formula $P(1-P)/d^2$, assuming a proportion of 13.8% for self-motivated health-seeking behavior with a 95% confidence interval and a 5% margin of error. The Raosoft application was used to calculate the sample size.

The inclusion and exclusion criteria were precisely defined, focusing on specific characteristics such as age, duration of therapy, and other relevant factors, excluding pregnant women, children, and newly diagnosed clients. The sampling table provided a representative subset of the total population.

Instrument

A self-made survey questionnaire was utilized, divided into four parts encompassing demographic profiles, health-seeking behaviors, health maintenance behaviors, and guidelines' implementation. The questionnaire was adapted into a 4-point Likert scale and converted into electronic format using Google Forms.

The questionnaires were critiqued and content-validated by a panel of experts, ensuring alignment with the study objectives.

Internal validity was assessed using Cronbach's alpha coefficient, resulting in a score of 0.813, indicating high internal consistency among the items. This high coefficient strengthens the validity of the questionnaires.

Data Gathering

A detailed data-gathering process was followed, from submitting the letter of request to the respective authorities to securing informed consent from the participants. Data collection took place from April 3, 2023, to April 28, 2023, through Google Forms. Ethical considerations were observed, including the participants' confidentiality and adherence to RA 11166.

Statistical Treatment

The study utilized a series of statistical treatments, including:

1. Descriptive Statistics: Employed to analyze the socio-demographic profile, health-seeking behaviors, health maintenance behaviors, and policy guideline implementations using frequencies, percentages, means, and measures of central tendency.
2. Tests of Difference: Independent t-tests and analysis of variance (ANOVA) were conducted to determine the relationship between the patient's profile and their staying in HIV care, viral suppression, and prevention of out-of-care scenarios.
3. Logistic Regression: Utilized to create a prediction model for identifying whether a patient is Out of Care (OOC). The stepwise method was employed to add and remove predictors based on their statistical significance, leading to the identification of a useful subset of predictors. The coefficients table presented the change in log odds for a one-unit increase in the predictor value, culminating in the predicted probability of a patient being OOC.

3. Results and Discussion

Socio-Demographic Profile

The survey collected data from 382 respondents and presented a multifaceted portrayal across different demographic factors, namely age, gender, civil status, educational attainment, occupation, years since being diagnosed with HIV, years of using Antiretroviral Therapy (ART), and episodes of stopping ART for 30 days or more.

Age: A significant majority, 83.51% of respondents, belong to the age range of 25–49 years. Gender: The male respondents constitute 91.88% of the sample, with female (5.50%) and transgender (2.62%) individuals forming the minority. Civil Status: The majority are single (92.15%), followed by married (4.71%), widowed (1.31%), and separated (1.83%). Educational Attainment: 49.21% are college graduates, 25.92% have some college education, and 10.73% have pursued post-graduate studies. Occupation: 70.94% of respondents are employed. Years Being Diagnosed: The distribution is fairly even. Years of Using ART: The distribution shows a mixture of both new and long-term ART users. Stopped ART for 30 Days or More: Most respondents (84.03%) have shown high adherence to HIV treatment.

The results obtained from the socio-demographic profile of the respondents have potential implications for understanding HIV care and developing effective strategies.

Age Implications: The representation of 83.51% within the 25–49 age range denotes a segment of the population that is typically considered economically productive. The health outcomes within this group could bear broad socio-economic consequences.

Gender Considerations: The significant male representation emphasizes the need for gender-specific HIV care strategies, in line with the higher prevalence of HIV among men.

Civil Status and Support System: The high percentage of single respondents may influence the social support available, thereby affecting health-seeking behaviors.

Educational Attainment and Health Literacy: The educational background could enhance their ability to navigate health care systems effectively, but it may not be a significant barrier to HIV care for this sample.

Occupation and Health-seeking Behavior: Employment status may affect health-seeking behaviors due to job-related stress or time constraints, despite the ability to support health needs.

Years Since Diagnosis and ART Adherence: The even distribution in years since diagnosis and mixed ART usage suggests a nuanced understanding of adherence patterns, which has implications for long-term health outcomes.

Adherence to ART: Though high adherence to ART is observed, support strategies are vital for the minority who have stopped treatment for extended periods, as these breaks in treatment may increase the risk of treatment failure and HIV transmission.

Health Seeking Behaviors of HIV Patients

Table 2 delineates the adherence to health-seeking behaviors observed among HIV patients in selected clinics and primary care HIV treatment centers.

Awareness and Comfort with HIV Care Facilities: High adherence was observed, with respondents indicating awareness of HIV care facilities (GWM = 3.73, SD = 0.22) and comfort in seeking care (GWM = 3.95, SD = 0.71).

Adherence to Health Maintenance: Many respondents reported regular medication intake (GWM = 3.62, SD = 0.50) and avoidance of high-risk activities (GWM = 3.84; SD = 0.72).

Concern Areas: Delays in accessing services at HIV treatment facilities (GWM = 3.25, SD = 0.48) and mental health issues (GWM = 2.52, SD = 0.76) were identified as areas of concern.

Use of Condoms: A moderate adherence to safer sex practices, with a GWM of 3.27 (SD = 0.68) for condom use during the last sexual encounter, was noted.

The results of the health-seeking behavior study provide both encouraging signs and areas for further attention among outpatient PLHIVs.

Promising Adherence to Health-Seeking Behaviors: The high-scoring indices related to awareness and treatment options reveal outpatient PLHIVs' empowerment and significant agency in seeking care, showcasing their ability to manage their health condition effectively.

Areas of Concern: Despite overall high adherence, delays in accessing services and mental health issues require attention. These suggest barriers that may affect the ability of PLHIVs to maintain optimal health.

Influence of Awareness and Comfort: The majority of respondents demonstrated a high degree of adherence to key health-seeking behaviors, emphasizing the role of accessibility and understanding of the health system.

Commitment to Health Maintenance: The respondents' regular adherence to prescribed medications and avoidance of high-risk behaviors reflects their understanding and commitment to health.

Potential Areas for Intervention: The moderate adherence to safer sex practices calls for potential intervention and increased education.

Implications for Stakeholders: The findings highlight the importance of maintaining and enhancing education programs for PLHIVs, ensuring accessible and efficient services, de-stigmatizing HIV, and improving service delivery.

Alignment with Existing Studies: Our results resonate with existing studies on health-seeking behaviors, emphasizing the role of awareness, comfort with healthcare facilities, socio-cultural factors, and socio-demographic influences.

Health Maintenance Behavior

Analyzing the extent of health-maintenance behaviors among outpatient People Living with HIV (PLHIV), the results of our study offer a comprehensive understanding of the level of adherence to health-maintenance behaviors. Key findings included high adherence in behaviors such as scheduling annual laboratory tests (mean = 3.52, SD = 1.12), complying with diagnostic procedures (mean = 3.68, SD = 0.97), refilling ARV medicines timely (mean = 3.66, SD = 1.09), and taking medication punctually (mean = 3.61). Furthermore, the respondents scored highest in viewing ARV medication as vital for survival (mean = 3.89, SD = 0.78) and ensuring adequate ARV medicines during travel (mean = 3.83, SD = 1.09).

However, moderate adherence was identified in ensuring a CD4 cell count every six months (mean = 2.97, SD = 0.78), complying with regular doctor visits (mean = 3.17, SD = 1.15), and follow-up checkups at least four times a year (mean = 3.19, SD = 1.06). Use of reminders like alarms (mean = 3.27, SD = 0.50), pillboxes (mean = 2.70, SD = 1.09), and confident consumption of ARV medications in public or private (mean = 3.19, SD = 1.06) also displayed a moderate level of adherence.

The results provide insights into two principal areas: adherence to key health-maintenance behaviors and areas for potential improvement. The high adherence to prescribed health-maintenance behaviors and understanding of the importance of consistent medication intake demonstrate a commendable level of engagement among PLHIVs. These findings align with and build upon previous work, emphasizing the effectiveness of current healthcare strategies and the determination of PLHIVs in managing HIV.

However, the areas of moderate adherence point to opportunities for intervention and support. Healthcare decision-makers should consider strategies for improving access to regular CD4 cell count determination, and regular doctor visits, as well as methods to assist patients with medication reminders. For instance, Li et al. (2021) highlighted the need for improvement in healthcare infrastructure, access, and communication to improve adherence to regular check-ups.

Community interventions can focus on fostering an environment where PLHIVs feel comfortable maintaining their health. Education programs to reduce HIV-related stigma, similar to the strategies proposed by Chen et al. (2019), may enhance confidence in taking ARV medication in public or private places. Further, the findings call for novel solutions to promote adherence to medication schedules, aligning with the research by Li et al. (2021) and Luu et al. (2022), which discussed the potential of tools and reminder devices.

Adherence to HSB & HMB based on DOH AO No. 2022-2024

The study presents a critical examination of healthcare sites' adherence to the Department of Health (DOH) Administrative Order No. 2022-2024 concerning outpatient People Living with HIV (PLHIV). The data reveals a high extent of adherence in essential domains, such as providing a favorable environment (GWM = 3.55, SD = 0.64), implementing a differentiated approach (GWM = 3.38, SD = 0.59), employing evidence and standards (GWM = 3.80, SD = 0.74), and maintaining a positive attitude of healthcare providers (GWM = 3.72, SD = 0.45). Furthermore, high adherence was identified in reinforcing adherence counseling (GWM = 3.65, SD = 0.96), notifying patients about their next visit (GWM = 3.70, SD = 0.95), assuring desired laboratory monitoring (GWM = 3.72, SD = 0.45), and allowing multi-month dispensing of ARV (GWM = 3.71, SD = 0.55).

Despite these encouraging findings, moderate adherence levels were discerned in certain aspects, including initiating ART on the same day as diagnosis (GWM = 3.16, SD = 0.57) and maintaining an environment free from disgrace for patients (GWM = 3.21, SD = 0.55).

The results yield significant insights into the adherence to DOH AO No. 2022-2024 among healthcare sites, reflecting both robust alignment with policy guidelines and identifying areas that warrant increased attention.

High Adherence: The high adherence to the majority of the guidelines denotes the success of policy implementation, which is pivotal in providing supportive, patient-centered, and evidence-based care for PLHIVs. This reflects a resilient healthcare system capable of adhering to complex guidelines, embodying a commitment to enhancing the quality of care.

Moderate Adherence: However, the areas of moderate adherence illuminate potential gaps that require scrutiny. The study's findings regarding the moderate adherence to ART initiation on the same day of diagnosis and preserving a non-disgraceful environment during treatment indicate the need for targeted interventions and revisions within the policy implementation framework.

Implications for Stakeholders: These results hold profound implications for various stakeholders, such as policymakers, healthcare providers, PLHIV, and the broader community. Policymakers must reassess the guidelines, concentrating on areas of moderate adherence to ensure consistent application across all healthcare sites. Enhanced training and resources may be needed to fortify these aspects of care.

Healthcare providers can leverage these findings to benchmark their practices, identifying areas where adherence to guidelines is strong and where improvement is necessary. Community education and advocacy can further bolster these efforts, ensuring that PLHIVs and their families are empowered to seek the highest standard of care.

Future Considerations: Continuous monitoring and evaluation mechanisms must be established to identify and address gaps in policy adherence. This will ensure that the guidelines continue to serve as a dynamic and effective tool in guiding healthcare providers in delivering optimal care for PLHIVs.

Effects Between Demographic Profile Groups in HSB, HMB, and Implementation of DOH AO No. 2022-2024 on retention to care, viral suppression, and prevention of out-of-care patients

1. The research examined the impact of demographic profiles on Health Seeking Behavior (HSB), Health Maintenance Behavior (HMB), and the implementation of DOH AO No. 2022-2024. Key demographic factors included age, gender, civil status, educational attainment, occupation, years of diagnosis, years of using ART, and cessation of ART. The results revealed:
 1. Age groups 18-24 differed significantly in engaging in high-risk activities.
 2. Differences in smoking behavior were observed among the 25-34 and 35-49 age groups and the 50 and above group.
 3. Gender-impacted smoking habits, showing significant differences between males and females.

4. Civil status, particularly among single individuals, influenced awareness of free treatment and consultation practices.
5. Educational attainment, specifically high school graduation, and some college education, showed differences in awareness of HIV care facilities and high-risk engagement.
6. Employment status influenced individuals' perspectives on consulting healthcare professionals.
7. The years of diagnosis and ART usage were significantly paired with behaviors and attitudes toward treatment.
8. Stopping ART correlated with differences in regular medication adherence.

Health maintenance behaviors revealed differences in civil status, educational attainment, and years of using ART. Specific aspects of DOH AO No. 2022-2024 implementation, including experiences and perceptions of the treatment environment and healthcare provider attitude, also demonstrated significant variations.

The study's results are instructive, suggesting that demographic factors significantly impact health-seeking and maintenance behaviors among individuals with HIV.

Age and Gender Impact: The findings on age-related differences in high-risk activities and smoking, and gender's influence on smoking, align with existing literature on behavioral characteristics affecting healthcare-seeking behavior.

Civil Status and Education Influence: The significant impact of civil status on healthcare awareness and the influence of education on awareness of HIV care facilities underscore the need for tailored interventions.

Occupation, Years of Diagnosis, and ART Usage: These results indicate a relationship between socio-economic factors and perceptions toward healthcare consultation, as well as the significance of diagnosis and treatment duration on behavior and attitudes.

Stopping ART: The correlation between stopping ART and adherence to medication emphasizes the importance of continuous treatment.

Implementation of DOH AO No. 2022-2024: The variations in experiences and perceptions concerning the treatment environment and healthcare provider attitudes highlight areas for potential improvement in policy implementation.

Implications for Out-of-Care (OOC) Prediction: The insights obtained could contribute to developing predictive models for HIV OOC patients by understanding specific demographic factors that may lead to OOC status.

Alignment with Previous Studies: The study's findings are congruent with both local and foreign research, reinforcing the need for interventions that address socioeconomic disparities, racial/ethnic inequalities, and gender-sensitive approaches.

Policy Instruments and the HIV Predicting Model

The logistic regression model was constructed to assess the probability of a patient not being Out of Care (OOC), considering variables related to health-seeking behaviors, awareness of HIV treatment facilities, years using Antiretroviral Therapy (ART), and facility practices. The final model provided good fit statistics with high R² values, indicating strong explanatory power.

The equation of the model is represented as:

$$[OOC]_N = e^{(Intercept + B1*AO1 + B2*HSB1 + B3*AO2 + B4*Demog1 + B5*HSB2)}$$
, with the following coefficients:

- Intercept = -260.095
- Coefficient of AO1 = 80.335
- Coefficient of HSB1 = 81.587
- Coefficient of AO2 = 41.476
- Coefficient of Demog1 = 39.323
- Coefficient of HSB2 = 40.964

These coefficients elucidate the change in the log odds of not being OOC for each unit increase in the predictor, holding all other variables constant.

The derived model sheds light on significant factors influencing the odds of a patient being OOC. The positive coefficients for variables such as awareness of free treatment (HSB1), belief in consulting healthcare professionals (HSB2), and multi-month dispensing (MMD) of ARV (AO2) indicate that these aspects heighten the likelihood of patient retention in care. Conversely, the lack of these factors may contribute to OOC status.

Moreover, the results emphasize the role of patient awareness, belief in professional healthcare, years of ART, and facility practices in patient retention. The insights can be instrumental for healthcare providers in tailoring interventions for individual patients, thereby utilizing a data-driven approach to personalized care.

The findings also provide a foundation for proposing policy changes aimed at reducing the OOC numbers, considering both patient education and quality care enhancement. Therefore, the model's application extends beyond clinical practice to broader healthcare strategy and policymaking.

Proposed Conceptual Framework

The study developed a logistic regression model to predict the likelihood of an HIV patient being Out of Care (OOC), focusing on health-seeking behaviors, HIV treatment and care, patient characteristics, retention to care based on DOH AO No. 2022–2024, and policy anticipation and loss prevention strategies.

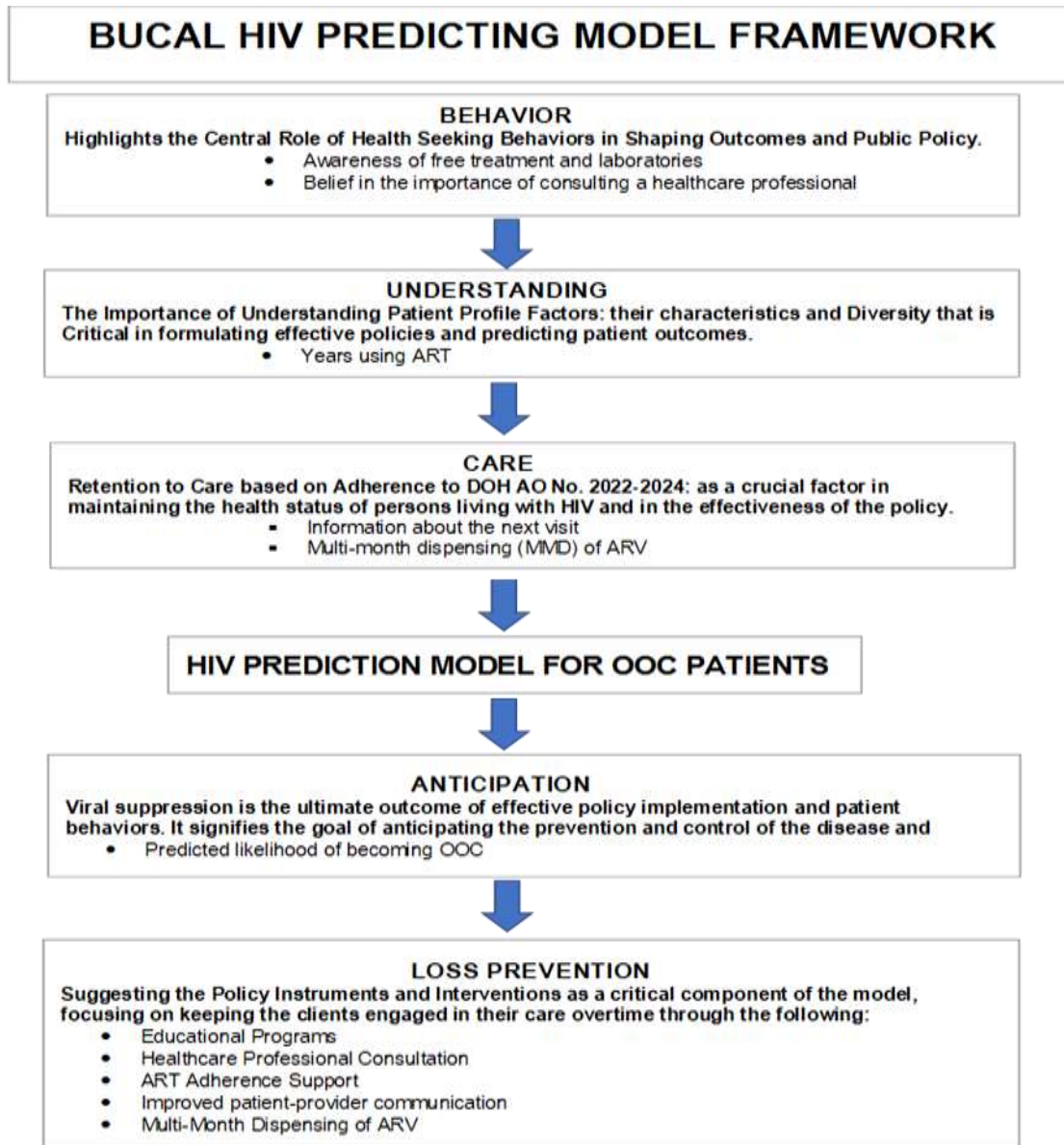


Figure 1. Final Conceptual Framework for Understanding and Addressing Out of Care Among People Living with HIV.

The study emphasizes a comprehensive understanding of the factors influencing OOC status. The predictive model offers practical insights into individualized patient care. Strategies such as implementing Education Programs, enhancing Healthcare Professional Consultation, providing ART Adherence Support, improving Patient-Provider Communication, and applying Multi-month Dispensing of ARV were identified as vital components in HIV care management. These strategies may significantly reduce Loss of Care (LOC) and foster an environment that promotes adherence and keeps patients engaged in their care.

The study's conceptual framework integrates these elements, providing a robust basis for future policy implementation aimed at preventing HIV patients from becoming OOC. The findings underscore the necessity of a multifaceted approach to HIV care, considering both medical treatment and the behaviors and attitudes of patients, thereby paving the way for innovative and targeted interventions in the field of HIV/AIDS management.

Conclusion and Recommendation

Conclusion

The present study elucidates the complex landscape of factors that influence health-seeking behaviors, adherence to treatment, and understanding of care among people living with HIV (PLHIVs), within the context of the Department of Health (DOH) Administrative Order No. 2022-2024. The majority of the respondents fall within a highly productive age range and are predominantly male and single, reflecting specific sociodemographic characteristics that may influence health outcomes. High levels of education and employment among respondents are positively correlated with adherence behaviors and understanding of treatment protocols. Conversely, there remain significant areas of concern, such as delays in accessing services and suboptimal adherence to safer sex practices.

Key factors such as age, gender, civil status, educational attainment, occupation, years since diagnosis, and years of using Antiretroviral Therapy (ART) have been identified as influencing various behaviors and attitudes toward treatment. The study underscores a commendable level of acceptance and understanding of the importance of consistent medication intake, while also highlighting areas requiring increased attention and intervention, particularly in the realm of high-risk activities and adherence to certain policy guidelines.

The findings offer essential insights for healthcare professionals, policymakers, and HIV care providers in shaping interventions, educational programs, and policy implementations that are both nuanced and tailored to the unique needs and characteristics of PLHIVs. Emphasizing the multifaceted nature of adherence and health-seeking behaviors, the study promotes a holistic approach that acknowledges the complexity of the HIV care continuum. The observed relationships between sociodemographic factors and adherence behaviors affirm the need for personalized, patient-centered strategies in HIV treatment and care. In conclusion, this study contributes valuable knowledge to the ongoing efforts to enhance HIV care, with an emphasis on patient engagement, policy adherence, and the implementation of strategies that are sensitive to the diverse needs of the HIV-positive population.

Recommendations

The present study has led to the derivation of the HIV Prediction Model, a significant milestone in HIV care and management. This model offers a comprehensive framework that captures the complex interactions between individual behaviors, treatment history, and healthcare system factors, thereby contributing to an advanced understanding of out-of-care (OOC) status among people living with HIV (PLHIV).

The model's inherent strength lies in its empirical foundation, identifying critical predictors of OOC status such as awareness of free treatment and laboratories, the importance of professional healthcare consultation, the duration of Antiretroviral Therapy (ART) usage, staff-patient communication about the next visit, and multi-month dispensing (MMD) of ARV. These predictors offer healthcare providers and policymakers a focused perspective, enabling the design of targeted interventions.

From a practical standpoint, the HIV Prediction Model has a wide-ranging applicability within the industry. Healthcare providers can use this model to identify patients at higher risk of becoming OOC, facilitating early interventions. Policymakers and health planners can also employ the model to devise strategies that respond directly to the predictors identified, thus enhancing patient retention within care. Furthermore, the model can be a substantial asset in research and evaluation, serving as a benchmark for understanding OOC, assessing current practices, and inspiring the development of innovative interventions.

Beyond the predictive model, the final conceptual framework of the study presents a novel theoretical construct for comprehending and tackling OOC among PLHIV. By synthesizing the predictors from the HIV Prediction Model, this framework lays out an intricate structure that accentuates the interplay of individual behaviors, treatment history, and healthcare system dynamics. The recommendation of this conceptual framework highlights its prospective utility in shaping interventions and policies targeting OOC. Concurrently, it provides a fertile ground for future research, encouraging an in-depth exploration of OOC's multifaceted dynamics.

References

- Chen, W.-T., Shiu, C., Yang, J. P., Li, C.-S. R., Wang, K., Zhang, L., Zhang, J., Bao, M., Aung, M. N., Chen, L.-C., Zhao, H., & Lu, H. (2018). Substance use, anxiety, and self-management efficacy in HIV-positive individuals: A mediation analysis. *Journal of Substance Use*, 23(4), 408-414. doi: 10.1080/14659891.2018.1436603
- Chirambo, L., Valeta, M., Kamanga, T. M. B., & Nyondo-Mipando, A. L. (2019). Factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi. *BMC Public Health*, 19, 1382. <https://doi.org/10.1186/s12889-019-7723-8>
- Embleton, L., Logie, C. H., Ngure, K., Nelson, L., Kimbo, L., Ayuku, D., Turan, J. M., & Braitstein, P. (2023). Intersectional stigma and implementation of HIV prevention and treatment services for adolescents living with and at risk for HIV: Opportunities for improvement in the HIV continuum in Sub-Saharan Africa. *AIDS and Behavior*, 27, 162-184. doi:10.1007/s10461-022-03677-8
- HIV.gov. (2021, May 17). Aging with HIV. Retrieved from <https://www.hiv.gov/hiv-basics/living-well-with-hiv/taking-care-of-yourself/aging-with-hiv/>

- Khadka, S., Shrestha, O., Koirala, G., Acharya, U., & Adhikari, G. (2022). Health seeking behavior and self-medication practice among undergraduate medical students of a teaching hospital: A cross-sectional study. *Annals of Medicine and Surgery*, 78, 103776. <https://doi.org/10.1016/j.amsu.2022.103776>
- Li, Y., Zhang, X.-W., Liao, B., Liang, J., He, W.-J., Liu, J., Yang, Y., Zhang, Y.-H., Ma, T., & Wang, J.-Y. (2021). Social support status and associated factors among people living with HIV/AIDS in Kunming city, China. *BMC Public Health*, 21, 1413. doi: 10.1186/s12889-021-11457-1
- Luu, K., Brubacher, L. J., Lau, L. L., Liu, J. A., & Dodd, W. (2022). Exploring the Role of Social Networks in Facilitating Health Service Access Among Low-Income Women in the Philippines: A Qualitative Study. *Health Services Insights*, 15. doi: 10.1177/11786329211068916.
- Shi, L., Tang, W., Liu, X., Hu, H., Qiu, T., Chen, Y., Xu, X., Chen, Y., Zhang, Z., Zhou, Y., Lu, J., & Fu, G. (2022). Trends of late HIV presentation and advance HIV disease among newly diagnosed HIV cases in Jiangsu, China: A serial cross-sectional study from 2008 to 2020. *Frontiers in Public Health*, 10, 1054765. doi: 10.3389/fpubh.2022.1054765
- Sok, S., Hong, R., Chhoun, P., Chann, N., Tuot, S., Mun, P., Brody, C., & Yi, S. (2020). HIV risks and recent HIV testing among transgender women in Cambodia: Findings from a national survey. *PLoS One*, 15(9), e0238314. doi: 10.1371/journal.pone.0238314.