HIV-CARE ADHERENCE AS A PREDICTOR FOR HEALTH OUTCOMES IN AN URBAN POPULATION OF WOMEN LIVING WITH HIV

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Introduction

- In the United States today, 67% of People living with HIV (PLWH) have received at least some form of HIV care, 49% are retained in HIV care, and 53% are virally suppressed[3] (Figure 1)
- The steps in the HIV care continuum are: diagnosed with HIV, linked to care, received medical care, retained in care, and achieved viral suppression[3].
- Viral load (copies/mL) quantifies the amount of load present in the blood. VL < 20 =undetectable, VL < 200 = viral suppression[4], VL >1000 = evaluation for adherence concerns[6].
- CD4 (cell count/mm³) is a health measure of the immune system. CD4 < 200 cells/mm³ = AIDS[3].
- Anti-retroviral therapy (ART) is prescribed to all PLWH. ART suppresses viral replication, permits high CD4 cell counts, and leads to increased survival and reduced mortality[2]. Adherence to ART has been shown to significantly decrease the risk of HIV-related complications[3].
- Attendance of HIV appointments is a significant independent predictor of disease progression[1].
- Study aim: to determine if self-reported ART adherence and/or clinic attendance are predictors of disease progression .

Figure 1: Percentage of PLWH in the US engaged in the HIV care continuum in 2016.
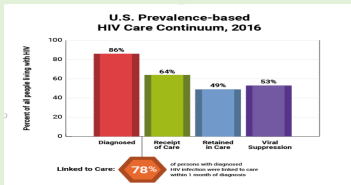
Methods

- Inclusion criteria: female, with a confirmed HIV diagnosis, >= 18 years old, with a history of non-adherence to care
- Non-adherence defined as: having a detectable HIV viral load OR missing one or more HIV-care appointments within the past year OR failure to take ART medication as prescribed
- Patients completed a 3-item questionnaire with self-reported variables, including the number of days ART was taken, the frequency of taking ART, and the rating of ART adherence[7].

Results

- The relationship between CD4 percentage and CD4 cell count was confirmed to be significant (p < 0.001, Table 1). Additionally, the relationship between viral load and CD4 cell count was confirmed to be significant (p < 0.05, Table 1).
- A statistically significant relationship between medication adherence and viral load (p <0.05) was observed (Table 2a).
- A statistically significant relationship (p <0.001) was observed between medication adherence and CD4 cell count (Table 2a).
- These results indicate that medication adherence can be used as a predictor of health outcomes with regard to disease progression and immune system function.
- A significant between clinic attendance and viral load (p < 0.05), CD4 cell count (p < 0.001) and CD4 percentage (p < 0.001) was observed, indicating that attendance of HIV appointments is an accurate predictor of disease progression (Table 2b).

| Table 1: Pearson Correlation Coefficient (r) and p value of qualitative lab results (CD4 raw count, CD4 percentage, and HIV Viral Load)			
Correlation Coefficient p value	CD4 Raw Count (cells/mm³)	CD4 Percentage (%)	HIV Viral Load (copies / mL)
CD4 Raw Count (cells/mm³)	--	--	--
CD4 Percentage (%)	r = 0.574 p < 0.001 (1.646e-4)	--	--
HIV Viral Load (copies / mL)	r = -0.3 p < 0.05 (0.0342)	r = -0.184 p = 0.2696	--

Table 2a: 2-tailed independent T-Test results (p values) of Viral Load (Copies/mL), CD4 Cell Count (cell count/mm³) and CD4 Percentage in regards to medication adherence.			
Pearson correlation coefficient p value	HIV Viral Load (Copies/mL)	CD4 Cell Count (cell count/mm³)	CD4 Percentage
Medication adherence (non-adherent defined as missing >=1 dosage)	r = 0.6843 p < 0.05 (0.0427)	r = -0.1506 p < 0.001 (5.319e-17)	r = 0.1283 p = 0.1066

Table 2b: 2-tailed independent T-Test results (p values) of Viral Load (Copies/mL), CD4 Cell Count (cell count/mm³) and CD4 Percentage in regards to clinic appointment attendance.			
Pearson correlation coefficient p value	HIV Viral Load (Copies/mL)	CD4 Cell Count (cell count/mm³)	CD4 Percentage
Clinic attendance (non-adherent defined as missing >=1 appointment)	r = 0.672 p < 0.05 (0.0427)	r = -0.1175 p < 0.001 (4.282e-16)	r = 0.0419 p < 0.001 (4.626e-10)
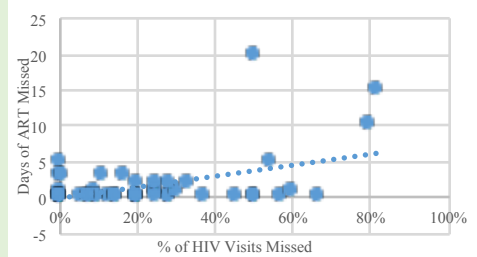
- The study cohort is an at-risk population for disengagement from the HIV-care continuum[5].
- A statistically significant relationship (p < 0.001, Figure 2) exists between clinic attendance and adherence to ART in this study.
- Patients that were non-adherent to one aspect of the HIV-care continuum are more likely to be non-adherent to another.

Figure 2: Relationship between non-adherence to clinic visits (% of HIV visits missed) and non-adherence to ART medication (days of ART missed). r = 0.567, p < 0.001.

Discussion

- One of the largest challenges in HIV care is creating a linkage from diagnosis to a lifelong of treatment adherence[3].
- This study confirmed the relationship between viral load and CD4 cell count as markers of disease progression.
- Patients who were adherent to ART were more likely to have lower viral loads and higher CD4 cell counts. These results confirm that self-reported adherence to ART may be used as an estimate for disease progression.
- Patients who did not miss a clinical appointment within the past year were more likely to be virally suppressed, and have higher CD4 cell counts. These results indicate that attendance at clinic appointments may be used as a predictor for adverse health outcomes.
- Quantification of adherence was a potential limitation in this study, as adherence is complex and influenced by several factors. Future studies must determine a threshold for adherence along various stages of the HIV care continuum.

Acknowledgements

References

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