

Exploring the minimal proportion of days covered (PDC) threshold required for achieving 90% viral suppression in people with HIV in the era of single-tablet regimens

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Background

- The required adherence to the Multiple-Tablet Regimen is high. We investigate the minimal Proportion of Days Covered (PDC) threshold needed to achieve 90% viral suppression (VS) (<200 copies/ml) in People with HIV (PWH) treated with Single-Tablet Regimens (STRs). We also examine the predictive power of this PDC threshold for VS and identify factors relevant to the PDC threshold.

Materials and methods

- This cross-sectional study was conducted at a Taiwan medical center from December 2023 to August 2024.
- We initially screened PWHs aged 18 years or older. The exclusion criteria are described as follows: (1) individuals diagnosed with HIV within the preceding year, (2) those who initiated ART within the preceding year, (3) those lacking complete ART dispensing records, (4) those lacking plasma viral load available within 90 days before or after enrollment, (5) those on MTRs at enrollment.
- We defined PDC as the proportion of days within the past 365 days in which HAART was dispensed. We categorized adherence into six levels: <55%, 55%–65%, 65%–75%, 75%–85%, 85%–95%, and $\geq 95\%$. Data of HIV plasma viral load (PVL) was the nearest PVL within ± 90 days of the questionnaire date. We defined VS as PVL <200 copies/ml. The optimal PDC was defined as the PDC threshold to achieve 90% VS among participants.
- We then used binary logistic regression to explore the association of the PDC threshold with failing to achieve VS and finally identify factors relevant to failing to reach this PDC threshold.
- We included demographics (i.e., age, sex, educational level, marital status, occupation, and residence status), HIV-related factors (i.e., HIV transmission route, duration of HIV, unsafe sex practices, sexually transmitted diseases, drug addiction, ART regimen, and AD8 score), and compliance with ART (i.e., PDC) in the multivariable model. All relevant demographic variables were considered for inclusion in the final multivariable model.

Results

Characteristics of 539 PWHs

- This study enrolled 539 participants (Figure 1), most of whom were men who have sex with men (84.42%) and most of whom were male (97.22%). In addition, most of the participants were aged between 30 and 50 years (84.04%), most were unmarried (91.09%), most were employed (78.80%), most lived with family members (59.37%), and most had received an HIV diagnosis more than five years previously (80.07%)

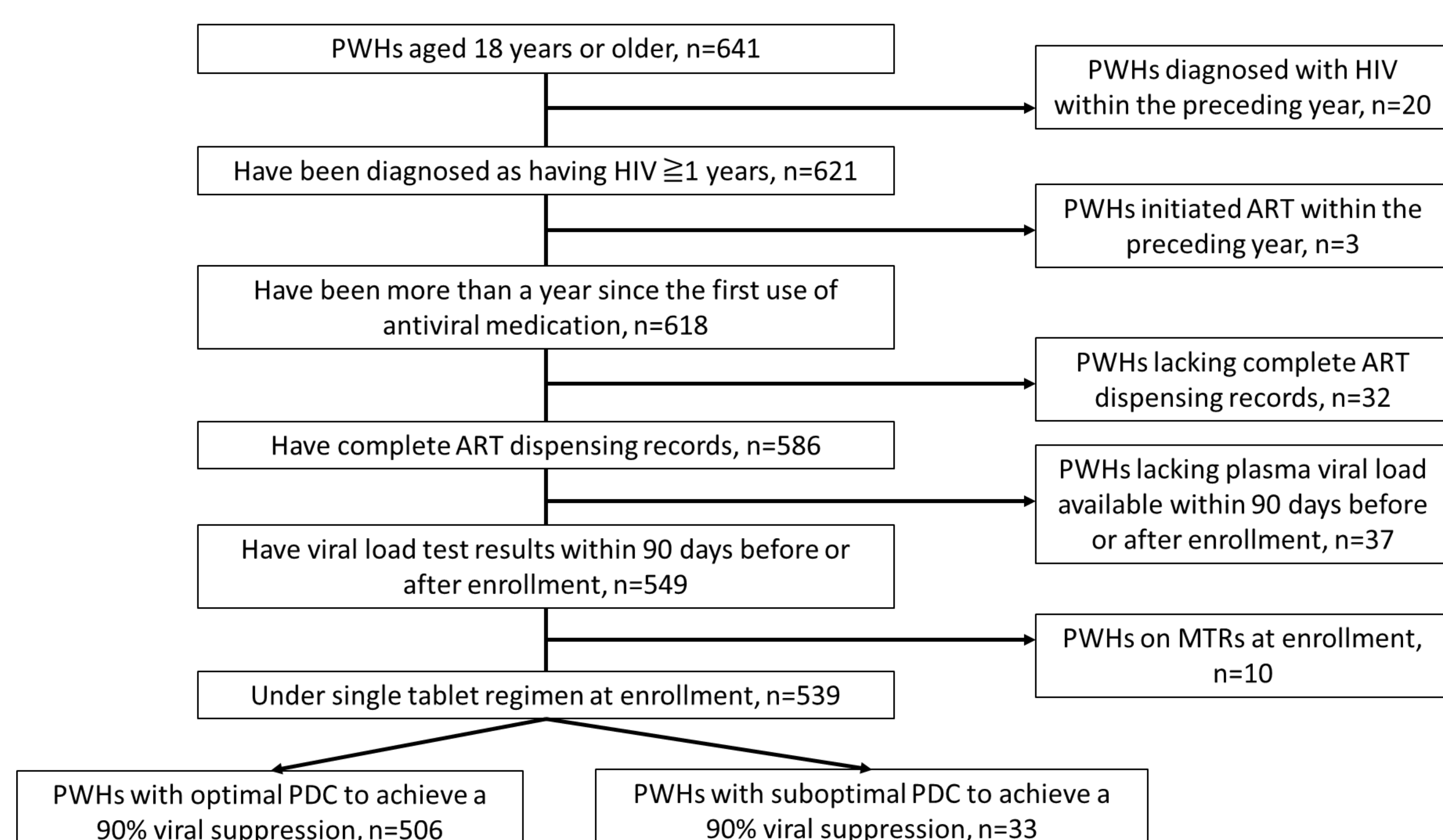


Figure 1. Study flowchart

VS Across PDC Categories

- The rates of VS across the PDC categories were as follows: PDCs of >95% had 98.55% suppression, PDCs of 85%–95% had 98.41% suppression, PDCs of 75%–85% had 93.33% suppression, PDCs of 65%–75% had 83.33% suppression, PDCs of 55%–65% had 83.33% suppression, and PDCs of <55% had 61.90% suppression (Figure 2). The optimal PDC threshold to achieve 90% VS was $\geq 75\%$.

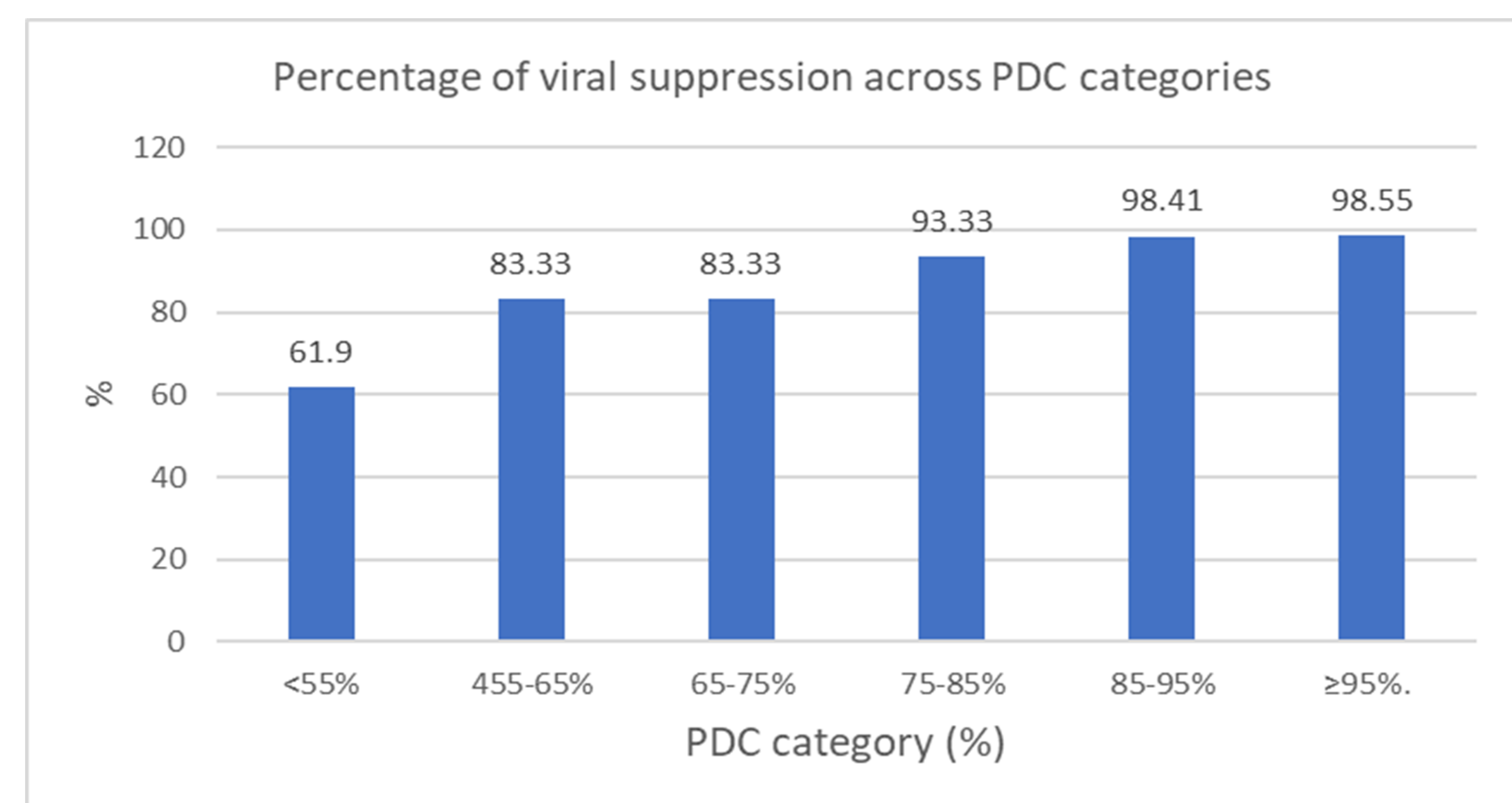


Figure 2. Percentage of viral suppression across PDC categories

Factors Influencing Failure to Achieve VS

- Evaluation of all relevant factors revealed that a PDC < 75% was significantly more likely to fail to achieve VS (adjusted OR [AOR]: 32.24, 95% CI: 9.18–113.25, $P < 0.001$) than those with a PDC $\geq 75\%$.

Failure to Achieve a PDC Threshold of 75%

- We finally identified having a sexually transmitted infection in the past year (AOR: 2.98, 95% CI=1.22-7.32, $P=0.017$) and having used addictive drugs during sexual behavior in the past three months (AOR=5.25, 95% CI=1.65-16.69, $P=0.049$) as factors associated to failing to reach this PDC threshold).

Conclusions

- Our study highlights a critical PDC threshold of 75% for achieving effective viral suppression in PWHs on STR in Taiwan, marking a decrease from the conventional 95% adherence requirement.

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