

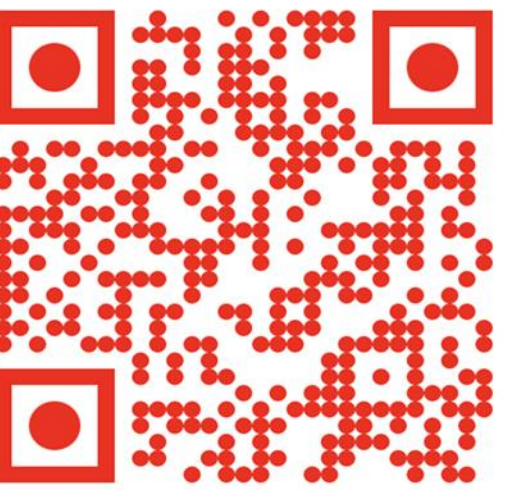
Association between virtual care and health outcomes of people living with HIV: A cross-sectional study

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Introduction

- In 2020, Ontario, Canada, had over 22,461 people living with HIV.¹
- Ontario provides universal public coverage for core services.
- Certain key populations experience suboptimal linkage in the HIV care continuum due to socio-demographic factors, which results in poor retention in care and antiretroviral therapy (ART) adherence and, consequently, negative HIV-related health outcomes.²
- Therefore, there is a need for a fully accessible and patient-centred healthcare system.

Virtual care

- Since 2022, virtual care has been integrated as a complementary option.
- Virtual visits have the potential to alleviate socio-economic barriers and enhance patient experience.
- However, virtual care has limitations, such as the lack of objective measurements and technological barriers.³

Objectives

- To compare adherence to ART, quality of life, and viral load among people living with HIV in Ontario who used virtual appointments with an HIV care physician to those who opted for in-person visits.
- Investigate socio-demographic factors such as sex, orientation, race, education level, income level and mental health associated with virtual visits.

Subjects and Methods

- Study design: Cross-sectional study
- Data collection: Data were sourced from the Ontario HIV Treatment Network Study (OCS) in 2022.
- Clinical data was collected from clinic records, and viral load was extracted from Public Health Ontario Laboratories (PHOL).⁴
- Inclusion criteria: Participants who had a visit with the HIV care physician in the past 12 months and completed the OCS questionnaire during the year 2022.
- Exclusion criteria: This analysis did not include Indigenous participants

Measures

Outcomes:

- Adherence to ART: Optimal adherence (≥95%)
- Viral load suppression: Suppressed viral load ≤ 40 copies/mL
- Quality of life (QOL): Short Form 12-item Health Survey (version 2)

Primary exposure:

Patients who have received care from an HIV physician in the past 12 months via any three modalities of care:

- In-person care in the clinic
- Virtual care, either by telephone or video call
- Received both in-person and virtual forms of care

Analysis

- Descriptive analysis:** Proportions and frequencies for categorical variables and mean and SD for continuous variables
- Multivariable logistic model** for dichotomous outcomes
- Multiple linear regression model** for continuous outcomes
- Multinomial regression** for categorical variables

Results

Table 1: Baseline characteristics of the study sample.

	In-person care n (%)	Virtual care n(%)	Virtual and in-person care n(%)
No. of participants	900	367	663
Medium age [IQR]	55 [44-62]	56 [46-62]	55 [45-62]
Female	233 (25.9)	60 (16.3)	132 (20.2)
Male MSM*	458 (50.8)	244 (66.4)	421 (63.4)
Male non-MSM	204 (22.6)	233 (63.4)	108 (16.2)
White	478 (53.1)	252 (68.7)	442 (66.6)
Black	263 (29.3)	55 (14.9)	130 (19.6)

*Men who have sex with men

Table 2: Multivariable regression analysis of HIV-related health outcomes.

Variable	Unadjusted Effect Estimates (95% CI)	^a Adjusted Effect Estimates (95% CI)
Adherence to ART (OR): in-person (ref)		
Virtual	1.47 (1.14-1.89)	1.31 (1.00-1.71)
Viral load: ref (< 40 ml/cc)		
Virtual care	0.56 (0.36-1.43)	0.61 (0.38-0.97)
MCS* Quality of life (mean difference): in-person (ref)		
Virtual and in-person	-0.90(-2.10-0.30)	0.96 (0.05-1.87)

*Mental component summary scale
^a Adjusted for covariates

Table 3: Multinomial regression. Socio-demographic factors with types of visits used.

Factors	Virtual and in-person visit	Virtual visit
	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Sex and orientation (ref: Male-MSM)		
Female (ref: Male-MSM)	0.65 (0.47- 0.90)	0.59 (0.40-0.88)
Male non-MSM	0.54 (0.39-0.73)	0.64 (0.45-0.92)
African/Caribbean/Black (ref: white)	0.76 (0.55-1.07)	0.57 (0.38-0.87)
Region (ref: Toronto region)		
Eastern Region	0.23 (0.14-0.37)	0.42 (0.26-0.68)
Southwestern	2.76 (2.01-3.79)	1.67 (1.13-2.47)
Depression (ref: None)		
Moderate -severe depression	2.80 (1.49-5.26)	1.29 (0.58-2.89)
Severe depression	2.46 (1.13-5.32)	0.80 (0.28-2.29)

Limitations

- We can not determine cause and effect due to the cross-sectional design.
- Virtual care was recently introduced.
- Lockdown and patients' viral load influenced the choice of visit type.

Strengths

- Used a novel research question.
- Used a robust analysis.
- Utilized a large sample size.
- Guided by the community advisory board (CAB).

Conclusions

- During the study period, people who received virtual care were more likely to be adherent to ART and virally suppressed. However, these associations may be since healthcare providers prioritized people with unsuppressed viral loads for in-person visits.

References

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