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HIV care cascade among cisgender men who have sex with men in a key population-led community center in the Philippines

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Abstract

The HIV epidemic in the Philippines is the fastest growing globally, and disproportionately affects cisgender men who have sex with men (cis-MSM) demanding effective strategies for this key population (KP) group. KP-specific and community-based (CB) interventions have improved the HIV response elsewhere, but these have yet to be evaluated locally. We analyzed the HIV care cascade outcomes in a KP-led, CB HIV test-and-treat center and determined factors that affect these by performing a retrospective study of medical records of 3137 patients diagnosed from January 2016 to March 2019 in LoveYourself in Manila, Philippines. Multivariate logistic regression was performed to determine predictors affecting the likelihood of antiretroviral therapy (ART) initiation and viral load (VL) suppression. As to UNAIDS 90–90–90 targets, LoveYourself had higher rates than national outcomes with 78% initiated ART and 84% achieved VL suppression. Such satisfactory performance is consistent with other studies exploring CB, KP-led approaches among cis-MSM. Patients who presented with WHO Stages 2–4 and those with sexually transmitted infections were less likely to initiate ART. Patients who presented with WHO Stages 2–4 and those whose ART was started late were less likely to be virally suppressed. These findings suggest the need to develop responsive interventions to reach the UNAIDS targets.

Keywords

Philippines HIV epidemic, HIV care cascade, men who have sex with men, key population, community-based

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Introduction

The HIV health crisis in the Philippines has been labeled an emergency with the country having the fastest growing epidemic globally.[1,2] New infections increased an estimated 207% from 2010 to 2019.[2] Moreover, the country has not fared well in achieving the UNAIDS 90–90–90 targets by 2020 as only 73% of people living with HIV (PLHIV) know their status, only 44% are on ART, and the prevalence of viral load (VL) suppression is unknown.[2] Particular key population (KP) groups are disproportionately affected, and these include cisgender men who have sex with men (cis-MSM), transgender women (TGW), and people who inject drugs, with prevalence rates at 25, 20, and 145 times higher than the general population, respectively.[2] Furthermore, cis-MSM, alone, comprise 84% of new infections since June 2015.[3] The lack of effective public health strategies has been consistently attributed to the scant published research about HIV prevention and control in the country.[4]

Analyses of the care cascade have influenced and informed HIV policies and programs.[5] In most countries, care cascade outcomes among key population (KP) groups are poor[2,6–10] and, ultimately, VL suppression rates are far below the target to impede the transmission among the KP.[11] In the Philippines, there are limited data available on HIV care cascade outcomes and predictors for advancement and

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attrition along the cascade in both the general and key affected populations. This has been determined to be a research priority to inform the local HIV response for it to become responsive and adaptive to KP groups.[4] The meager ART initiation and VL testing coverage in the country remain as significant deterrents to controlling the epidemic. With only one in three cis-MSM and TGW aware that there is HIV treatment[12] and with two in three diagnosed PLHIV yet to initiate treatment in 2019 at least 3 years past their time of diagnosis,[13] there is much to be done locally to maximize the engagement of the population who will benefit from ART the most. However, while engagement seems achievable, it has long been challenged by structural, upstream elements. Filipino sociocultural factors,[14–16] including the strong religious underpinning, collectivist foundation, and fatalistic[17] and machismo attitudes,[18] are known to perpetuate stigmatization and act as barriers to accessing sexual health services, especially among sexual and gender minorities, to the point that cis-MSM tend to self-medicate.[16] Moreover, although VL testing has been deemed vital in HIV control in both the individual[19] and population levels,[20–22] it continues to be inaccessible in the Philippines,[11] due to expensive costs and clinical and system incapacity.[23] While VL suppression is required to control the epidemic,[24] especially among KP groups,[11] VL suppression is dependent on both effective[25] and timely[26,27] enrollment in diagnosis, linkage to care, ART initiation, and retention in care, which are equally essential parts of the HIV care cascade.

UNAIDS has highlighted the key role of the community in the HIV response, especially among the KP.[28] KP-specific service delivery,[29] community-based (CB),[28–34] and peer-led[7,34–37] interventions have been determined to improve the HIV response in other countries through better reach among first-time testers,[33,37] asymptomatic individuals with high CD4 counts,[33] and those most at risk,[37] and such interventions have been attributed with reduced stigma[32] and increased interconnectedness and empathy.[36] Hence, these have been adopted in many countries. Aside from the fact that there is a paucity of such services, these strategies have yet to be evaluated in the Philippines. This study evaluated care cascade outcomes among cis-MSM in a KP-led, CB HIV test-and-treat center in Metro Manila, Philippines, and determined factors that affect ART initiation and VL suppression.

Methods

Study design and participants

We did a single-center, retrospective cohort analysis of medical records at LoveYourself, a cis-MSM and TGW volunteer-led, CB HIV test-and-treat primary care center in Metro Manila, Philippines, which currently provides care services to 8.3% of all diagnosed PLHIV in the country.

We performed a secondary analysis of data routinely collected from patients in LoveYourself who tested HIV positive, 18 years old and older, male sex, and identified as cis-MSM from 3 January 2016 to 29 March 2019. Those who identified as transgender were excluded due to the small number of patients.

Ethical approval was received from the National Ethics Commission of the Philippine Council on Health Research and Development and the Human Research Ethics Committee of the University of New South Wales, Australia.

Procedures

Patients who tested positive were offered enrollment for care in LoveYourself with CD4 T-cell count determination, screening for tuberculosis, syphilis, and hepatitis B. After which clinical evaluation was done by a healthcare provider. Quarterly follow-ups were done, and VL measurements were done at least 6 months after ART initiation. We evaluated a one-year follow-up for all patients.

Our primary outcomes of interest were rates of enrollment in different components of the cascade. To enable comparison, definitions of each outcome were based on previous studies[6,22,25,38] and national[3] and international guidelines[39]: (1) diagnosis (presented early or with advanced HIV disease, i.e., World Health Organization (WHO) Clinical Stages 3–4 or CD4 < 200, or not)[39]; (2) linkage to care (enrolled in a timely manner, i.e., <30 days from diagnosis, or otherwise)[38]; (3) ART initiation (started on treatment early, i.e., <30 days from diagnosis, or not); (4) retained in care (those documented alive on ART, without documented 90 day absence[3] since their last expected clinic visit, or otherwise)[25]; (5) VL measurement done 6–12 months after ART initiation; and (6) VL suppression (VL < 200 copies/mL).[22]

Statistical analysis

Descriptive statistics were done to summarize baseline demographic and clinical parameters. To describe the care cascade, we calculated the prevalence at each component (i.e., the number of individuals who proceeded through each component divided by the number who were diagnosed).[5] To compare the LoveYourself data with national cascade outcomes in terms of UNAIDS 90–90–90 targets, the number of individuals who were started on ART was divided by the number of those who were diagnosed and the number of those with suppressed VL was divided by the number of those started on ART.[40]

We performed multivariate logistic regression analyses to determine predictors associated with two outcomes—(1) ART initiation among those linked to care and (2) VL suppression among those retained on ART. These predictors included demographic (age, location of residence, and employment status) and clinical characteristics (timing of diagnosis and ART initiation, CD4 count, WHO staging,

Table 1. Baseline characteristics.

Demographics among those diagnosed with HIV (*N* = 3137)		
Age (in years)	Mean (SD)	27.85 (5.59)
	Median (IQR)	27 (24–31)
	Below 20	117 (3.7%)
	20–29	1971 (62.8%)
	30–39	937 (29.9%)
	40 and above	112 (3.6%)
	Missing	0
Employment status	Employed	2400 (76.5%)
	Unemployed	515 (16.4%)
	Missing	222 (7.1%)
Location	Metro Manila	2300 (73.3%)
	Outside Metro Manila	623 (19.9%)
	Missing	214 (6.8%)
Clinical characteristics among those linked to care (*N* = 2757)		
WHO staging	I	2067 (75.0%)
	2–4	619 (22.5%)
	Missing	71 (2.6%)
CD4 count at diagnosis (cells per μL)	Mean (SD)	308.4 (210.1)
	Median (IQR)	300 (135–443)
	<200	867 (31.4%)
	200–349	729 (26.4%)
	≥350	1110 (40.3%)
	Missing	51 (1.8%)
Chronic comorbidities	None	1973 (71.6%)
	Present	646 (23.4%)
	Missing	138 (5.0%)
STI comorbidities	None	2201 (79.8%)
	Present	423 (15.3%)
	Missing	133 (4.8%)
Substance use	Nonuser	2281 (82.7%)
	User	476 (17.3%)
	Missing	0

SD: standard deviation; IQR: interquartile range; WHO: World Health Organization; STI: sexually transmitted infection.

chronic and sexually transmitted infection (STI) comorbidities, and substance use). Multivariate logistic regression analyses were done using backward elimination. Predictors which were statistically significant in the initial univariate analyses at $p < 0.25$ were included in the final multivariate analyses. We used $p < 0.05$ to determine significant adjusted odds ratios (aOR) in the final models. We performed all the analyses using R v3.6.3.

Results

There were 3137 individuals who identified as cis-MSM and were diagnosed with HIV infection at LoveYourself from 3 January 2016 to 29 March 2019. Most participants were in the age group of 20–29 years (62.8%), with a median age of 27 years old. The majority were employed (76.5%) and were residing in urban Metro Manila (73.3%) (Table 1).

Table 2 summarizes the outcomes for each component of the cascade, with corresponding subcategories, and UNAIDS 90–90–90 target outcome estimations based on LoveYourself and National cascade data.[2,13] It is shown on the table that the retention in each component of the cascade is high in LoveYourself. Specifically, 78.4% were initiated on ART and 84.2% were virally suppressed, which are both higher than the 60.0% and 17.0% national percentages (Table 2).

One-third of participants (35.0%) presented with advanced HIV disease upon initial presentation. Only 87.8% (2757) were linked to care, and the rest were lost to follow-up (LTFU). The median time for linkage to care was 0 days (range 0–339). The cohort had a median baseline CD4 count of 300 cells/μL (interquartile range, IQR, 135–443). Among those linked to care, 23%

Table 2. Outcomes at each component of HIV cascade of care.

	LoveYourself (CB, KP-led) data			National data
Cascade of care	*n* (%)	*n* (% among those diagnosed)	% using 2020 UNAIDS 90–90–90 target	% using 2020 UNAIDS 90–90–90 target estimates
Diagnosed	3137	3137 (100%)	—	73%
Early HIV disease	1918 (61.1%)			
Advanced HIV disease	1099 (35.0%)			
Missing				
Linked to care	2757	2757 (87.8%)	—	—
Timely	2709 (98.3%)			
Late	48 (1.7%)			
Missing	0			
Not linked to care	380			
Initiated on ART	2460	2460 (78.4%)	78.4%	60%
Early initiation of ART	1644 (66.8%)			
Late initiation of ART	816 (33.2%)			
Missing	0			
Not initiated	297			
Retained to care	2368	2368 (75.5%)	—	—
Not retained to care	92			
Lost to follow-up	81 (88.0%)			
Died	11 (12.0%)			
Viral load (VL) measured	2114	2114(67.4%)	—	—
VL not measured	254	—	—	—
VL suppressed	2072 (98.0%)	2072 (66.1%)	84.2%	17%
VL not suppressed	43 (2.0%)			

HIV: human immunodeficiency virus; ART: antiretroviral therapy; CB: community-based; KP: key population; VL: viral load. Note: National cascade data from UNAIDS (2020) and Department of Health (2019).

presented with opportunistic infections (OI), with oral candidiasis (9.4%), tuberculosis (7.8%, 84.6% of the cases are pulmonary, while 15.4% are extrapulmonary), and *Pneumocystis jirovecii* pneumonia (3.9%) as the most common OIs.

Of 2757 who were linked to care, 2460 (78.4% of those diagnosed) were started on ART. Two in three (65.7%) were started within 30 days of diagnosis with a median of 23 days (IQR 15–37, range 0–363). Patients who were not started on ART were either LTFU or have died prior to ART initiation and more than half of them presented with WHO Stages 2–4. Univariate logistic regression analysis showed that ART initiation was significantly less likely among patients with WHO Stages 2–4 (odds ratio, OR = 0.44 (95% confidence interval, CI, 0.34–0.59), $p < 0.001$) and more likely among substance users (OR = 1.53 (95% CI 1.08–2.22), $p = 0.021$) (Table 3). After adjusting for other predictors, multivariate regression analysis revealed significant findings for WHO Stages 2–4 (aOR = 0.59 (95% CI 0.40–0.89), $p = 0.005$) and STI coinfection (aOR = 0.69 (95% CI 0.48–1.00), $p = 0.048$).

Retention in care was seen in 2368 patients (75.5% among diagnosed), while 81 (3.3%) were lost to follow-up and 11 (0.4%) were reported to have died. Among those who were retained, 2114 (67.4% among diagnosed) were able to have their VL measured at 6–12 months after ART initiation with VL suppression seen in 2072 individuals (98.0% among VL measured).

In univariate analyses done to explore predictors for the likelihood of VL suppression among those who were retained on ART (Table 4), it was noted that having been diagnosed with advanced HIV disease, presenting to care with WHO Stages 2–4, and having started on ART late were associated with a lower probability of VL suppression. Meanwhile, being 40 years and older and having a higher baseline CD4 count were associated with a higher probability of VL suppression. Upon adjusting for other predictors, we found that individuals who presented with WHO Stages 2–4 (aOR = 0.67 (95% CI 0.50–0.90), $p = 0.01$) and those whose ARTs were started late (aOR = 0.61 (95% CI 0.47–0.79) $p < 0.001$) were significantly less likely to be virally suppressed.

Discussion

This study describes the care cascade outcomes and identifies possible predictors for ART initiation and VL suppression in a large sample of newly diagnosed cis-MSM living with HIV at a CB, KP-led primary care center in Metro Manila.

Table 3. Likelihood of ART initiation among those who are linked to care (n = 2757).

	Linked to care (n = 2757, %)	Started ART (n = 2460, %)	Univariate analysis (OR, 95% CI, p-value)		Multivariate analysis (adjusted OR, 95% CI, p-value)	
Timing of diagnosis						
Early	1749 (63.4%)	1579 (90.3%)	1			
Advanced disease	971 (35.2%)	872 (89.8%)	0.95 (0.73–1.23)	p = 0.690		
Missing	37 (1.3%)	9				
Age (in years)						
Below 20	109 (4.0%)	95 (87.2%)	1			
20 to 29	1744 (63.3%)	1548 (88.8%)	1.16 (0.63–2.01)	p = 0.608		
30 to 39	810 (29.4%)	734 (90.6%)	1.42 (0.75–2.54)	p = 0.256		
40 and above	94 (3.4%)	83 (88.3%)	1.11 (0.48–2.63)	p = 0.805		
Missing	0 (0.0%)					
Location						
Metro Manila	2047 (74.2%)	1827 (89.3%)	1			
Outside Metro Manila	554 (20.1%)	495 (89.4%)	1.01 (0.75–1.38)	p = 0.947		
Missing	156 (5.7%)	138				
Employment status[a]						
Unemployed	458 (16.6%)	418 (91.3%)	1			
Employed	2150 (78.0%)	1923 (89.4%)	0.81 (0.56–1.14)	p = 0.243[a]		
Missing	149 (5.4%)	119				
CD4 count (cells per μL)[a]						
Below 200	867 (31.4%)	782 (90.2%)	1		1	
200 to 349	729 (26.4%)	670 (91.9%)	1.23 (0.85–1.52)	p = 0.235[a]	0.95 (0.66–1.54)	p = 0.830
350 and above	1110 (40.3%)	991 (89.3%)	0.91 (0.54–1.09)	p = 0.506	0.90 (0.61–1.35)	p = 0.978
Missing	51 (1.8%)	17				
WHO staging[a,b]						
Stage 1	2067 (75.0%)	1920 (92.9%)	1		1	
Stages 2–4	619 (22.5%)	528 (85.3%)	0.44 (0.34–0.59)	p < 0.001[a]	0.59 (0.40–0.89)	p = 0.005[b]
Missing	71 (2.6%)	12				
Comorbidities						
Absent	1973 (71.6%)	1816 (92.0%)	1			
Present	646 (23.4%)	594 (92.0%)	0.99 (0.72–1.38)	p = 0.940		
Missing	138 (5.0%)	50				
Substance[a]						
None	2281 (82.7%)	2021 (88.6%)	1			
Using	476 (17.3%)	439 (92.2%)	1.53 (1.08–2.22)	p = 0.021[a]		
Missing	0 (0.0%)	0				
STI at diagnosis[a,b]						
Absent	2201 (79.8%)	2034 (92.4%)	1		1	
Present	423 (15.3%)	380 (89.8%)	0.73 (0.51–1.04)	p = 0.075[a]	0.69 (0.48–1.00)	p = 0.048[b]
Missing	133 (4.8%)	46				

WHO: World Health Organization; STI: sexually transmitted infection; ART: antiretroviral therapy.
Model statistics: Cstat = 0.56; R^2 = 0.29; Hosmer–Lemeshow test: X^2 = 6.14, df = 8, p-value = 0.63.
[a]Significant predictor in the univariate analysis at p < 0.25, included in the multivariate analysis.
[b]Significant at p < 0.05 in the final model.

Our findings of satisfactory UNAIDS target performance are consistent with other studies exploring CB, KP-led HIV test-and-treat approaches among cis-MSM[30,31] and could be explained by the advantages inherent in this approach.[30–33,37,41,42] Peer-led approaches have been documented to improve care cascade outcomes among both cis-MSM[7,34–36] and young adults,[43] which characterize our study sample. Moreover, evidence-based facilitators of linkage and retention were and are in place in Love-Yourself, including a test-and-treat[44] one-stop shop strategy,[31] healthcare professionals adept with the KP culture,[42] social entrepreneurship,[45] free care services, and extension of peer participation through other projects related to the advocacy.[46]

Table 4. Viral load suppression among those retained on ART (n = 2368).

	Retained to care (n = 2368, %)	Virally suppressed (n = 2072, %)	Univariate analysis (OR, 95% CI, p-value)		Multivariate analysis (adjusted OR, 95% CI, p-value)	
Timing of diagnosis[a]						
Early	1521 (64.2%)	1349 (88.7%)	1		—	—
Advanced disease	839 (35.4%)	717 (85.5%)	0.75 (0.58–0.96)	p = 0.02[a]		
Missing	8 (0.3%)	6				
Age (in years)[a]						
Below 20	93 (3.9%)	76 (81.7%)	1		1	
20 to 29	1488 (62.8%)	1310 (88.0%)	1.65 (0.92–2.78)	p = 0.08[a]	1.55 (0.83–2.75)	p = 0.15
30 to 39	708 (29.9%)	612 (86.4%)	1.43 (0.79–2.46)	p = 0.22[a]	1.31 (0.68–2.39)	p = 0.40
40 and above	79 (3.3%)	74 (93.7%)	3.31 (1.24–10.49)	p = 0.03[a]	2.91 (1.05–9.45)	p = 0.05
Missing	0 (0.0%)	0				
Location[a]						
Metro Manila	1763 (74.5%)	1560 (88.5%)	1		1	
Outside Metro Manila	470 (19.8%)	404 (86.0%)	0.80 (0.59–1.08)	p = 0.14[a]	0.79 (0.59–1.08)	p = 0.13
Missing	135 (5.7%)	108				
Employment status[a]						
Unemployed	391 (16.5%)	334 (85.4%)	1		1	
Employed	1863 (78.7%)	1648 (88.5%)	1.31 (0.95–1.78)	p = 0.09[a]	1.23 (0.87–1.71)	p = 0.23
Missing	114 (4.8%)	90				
CD4 count (cells per μL)[a]						
Below 200	752 (31.8%)	641 (85.2%)	1		—	—
200 to 349	650 (27.4%)	584 (89.8%)	0.43 (1.11–2.13)	p = 0.01[a]		
350 and above	950 (40.1%)	833 (87.7%)	0.21 (0.93–1.63)	p = 0.14		
Missing	16 (0.7%)	14				
WHO staging[a,b]						
Stage I	1856 (78.4%)	1640 (88.4%)	1		1	
Stages 2–4	502 (21.2%)	423 (84.3%)	0.71 (0.54–0.94)	p = 0.01[a]	0.67 (0.50–0.90)	p = 0.01[b]
Missing	10 (0.4%)	9				
Comorbidities						
Absent	1756 (74.2%)	1541 (87.8%)	1			
Present	571 (24.1%)	500 (87.6%)	0.98 (1.35–0.76)	p = 0.90		
Missing	41 (1.7%)	31				
Substance						
None	1948 (82.3%)	1704 (87.5%)	1			
Using	420 (17.7%)	368 (87.6%)	1.01 (0.74–1.41)	p = 0.94		
Missing	0 (0.0%)					
STI at diagnosis[a]						
Absent	1964 (82.9%)	1729 (88.0%)	1			
Present	365 (15.4%)	314 (86.0%)	0.84 (0.61–1.17)	p = 0.28		
Missing	39 (1.6%)	29				
Timing of ART[a,b]						
Early	1589 (67.1%)	1417 (89.2%)	1		1	
Late	779 (32.9%)	655 (84.1%)	0.64 (0.50–0.82)	p < 0.001[a]	0.61 (0.47–0.79)	p < 0.001[b]
Missing	0 (0.0%)	0				

WHO: World Health Organization; STI: sexually transmitted infection; ART: antiretroviral therapy.
Model statistics: Cstat = 0.60; R^2 = 0.24; Hosmer–Lemeshow test: X^2 = 3.21, df = 8, p-value = 0.92.
[a]Significant predictor in the univariate analysis at p < 0.25 to be included in the multivariate analysis.
[b]Significant at p < 0.05 in the final model.

Unlike in the national estimates, there was a significant uptake of VL measurement in the CB, KP-led center due to the robust service delivery system. The national low uptake of VL testing, despite being a standard of care, is evidence of the limited access to the test in the Philippines.

It is important to note that those who presented with STI were less likely to be initiated on ART. Aside from one

previous study finding that syphilis coinfection and history of STI were associated with increased likelihood of ART initiation,[47] to our knowledge, the influence of STI on ART initiation has been unexplored. In the Philippine context, STI as a barrier to treatment access may be explained by poor health-seeking behaviors among cis-MSM,[42,47] secondary to sociocultural factors,[14–16] and the lack of awareness.[48] We speculate that STI diagnosis adds to the stigma compared to being diagnosed with HIV alone. This emphasizes the importance of strategies taking both sociocultural values[50,51] into consideration and incorporating prevention of other STI in HIV programs,[52,53] especially given that STI comorbidities increase both susceptibility to HIV infection[54] and the likelihood of transmitting HIV[55–57] whether or not adherent to treatment.[58,59]

Apart from one study,[60] our finding that those who presented with WHO Stages 2–4 were less likely to be initiated on ART is not consistent with most other studies. However, our study cohort participants were enrolled in 2016, soon after the WHO recommended to treat all PLHIV, regardless of CD4 count in 2015,[19] whereas previous studies showing opposite correlation of WHO staging and ART initiation were done with cohorts whose treatment was initiated prior to the revised recommendation by the WHO.[47,61–65] Moreover, there are many possible barriers in ART initiation for those with AIDS-related symptoms, and these include delays in initiation due to simultaneous diagnosis and treatment of OI and being too unwell and sick.[61] Nonetheless, as this is done in primary care, it is noteworthy that the most common OI noted are similar to those in tertiary care settings.[66,67] It is worth noting that 35.0% of newly diagnosed patients in this cohort presented with advanced disease, which suggests, alongside the association between AIDS-related manifestations and lower probability of ART initiation, that a large proportion of cis-MSM are diagnosed late and might not be started on ART. Gaps in early diagnosis and treatment may also be explained by the most recent biobehavioral surveillance among cis-MSM and TGW, which found that only 32% know their HIV status for the past 12 months, only 32% were tested for HIV in the past year, and only 33% know that there is HIV treatment.[12]

As far as we are aware, this is the first study to provide information on the prevalence and predictors of VL suppression in a large cohort with high uptake of VL testing in a KP-led, CB center. Predictors associated with VL suppression in this cohort are similar to other studies elsewhere. First, late initiation of ART has been shown to be associated with non-suppression[68] and, conversely, the probability of and speed in attaining suppression were established to increase among those started on ART earlier.[69–72] Second, having AIDS-related manifestations was also associated with a lower probability of starting ART.[6,73] Our findings from the multivariate analyses emphasize the significance of early diagnosis and early ART initiation to achieve both clinical and public health benefit.

There are key strengths in our study design, which make it an insightful description of the epidemic among the cis-MSM community in the Philippines and the role CB organizations and peers play. First, the consistent, robust service delivery was able to provide relevant, uniform data. Especially the provision of VL testing, with 89.2% coverage among those retained in our cohort, which is well above the national rate of 17.0% of PLHIV,[13] not only provides clinical and public health benefits but also academic advantages to create evidence-informed programs and policies. Second, the large number of enrolled patients was vital to providing an adequate number of participants for the analyses.

Meanwhile, we recognize a few limitations. The retrospective nature of the analysis does not allow controlled and prudent comparison of community- and facility-based outcomes, for which limited data are freely accessible in the Philippines. Also, patients we have tagged LTFU may have outcomes we were not able to document. Second, the study focused on cis-MSM who accessed testing and treatment in Metro Manila; hence, this does not necessarily capture issues of other relevant local KP groups, including TGW and persons who inject drugs, and other locations with high HIV incidence. We acknowledge that backward regression has been shown to lead to erroneous models and has its inherent limitations which include lack of consistencies regarding model selection, biased generalization, and focus on a determined single model.[74,75] However, the performance of backward regression improves when the sample size far exceeds the number of candidate variables.[76] In our study, we included only 9 and 10 candidate predictors in our multivariate regression models, chosen based on extensive literature review and expert input, and our sample size is over 3000. Hence, we are confident that our regression analysis identifies the primary predictors of ART initiation and VL suppression within the context of the study.

While this analysis adds to the evidence of the impact of KP-specific and CB interventions on the HIV response globally, the dearth in HIV research in the Philippines demands more exploration to inform the local HIV response. Due to the inevitable impact of culture in the overall sexual health and well-being of Filipinos, let alone among sexual and gender minorities, further studies with the inclusion of sociocultural and behavioral factors as possible predictors may disclose associations that may further inform policies and programs. In addition, further studies involving VL testing would shed light on the overall control of the local epidemic, which is not currently well known due to the scarcity of knowledge on VL outcomes. Upscaling VL testing access is therefore a nonnegotiable endeavor both for public health and academic purposes. Furthermore, efficacy studies through direct comparison of CB, KP-led interventions and facility-level care through more robust research methods could justify CB, KP-led interventions further. Last, there are other geographical areas and KP groups in the country with increasing HIV burden that need attention.

Amid the limited HIV research in the Philippines, through this study, we have provided information on the predictors of ART initiation and VL suppression among cis-MSM in Metro Manila, Philippines. With the Philippines being unable to reach the UNAIDS 90–90–90 targets by 2020,[2] there is much to be done nationally. A targeted approach on KP groups based on the predictors found here would be a judicious method to curb the fastest growing epidemic globally. Moreover, as recommended by the WHO,[29] the consideration of the involvement of more CB organizations in service delivery may be impactful, especially among KP groups. Last, HIV among cis-MSM has multiple layers of stigma that could be addressed through the aforementioned approaches to improve access to sexual health services. Hence, differentiated service delivery informed by evidence with the involvement of the community, themselves, should be a national priority.

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Data availability

This is a secondary data analysis through a chart review. Due to ethical reasons, the dataset formulated and analyzed is not publicly available. Requests for the data may be sent to Patrick C. Eustaquio via patrick@loveyourself.ph.

Disclosure statement

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