

Quality of Life and its Determinants among Filipino People Living with HIV/AIDS Enrolled in the Treatment Hub of a Tertiary Government Hospital

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ABSTRACT

Objective. To assess the quality of life (QoL) and its determinants among Filipino People Living with HIV (PLHIV).

Methods. This is a cross-sectional analytical study. Adult Filipino PLHIV linked to the treatment hub of a tertiary government hospital in the Philippines were surveyed utilizing the WHOQOL-HIV BREF assessment tool. Other variables of interest were obtained from medical records. Linear regression analysis was applied.

Results. A total of 341 HIV-seropositive patients were included. The median age was 32 years, and respondents were mostly male (93.55%). Majority had good general QoL (58.6%). Regression analysis showed that among the factors associated with good general QoL were: CD4 \geq 200 cells/ μ L ($p = 0.043$), and ARV duration $>$ 3 months ($p = 0.022$). Conversely, low education ($p \leq 0.001$), poor treatment adherence ($p \leq 0.001$), and presence of opportunistic infections ($p \leq 0.05$) were associated with poor general QoL. Female sex ($p = 0.025$) and unemployment ($p = 0.006$) were associated with poor QoL in the environment and independence domains, respectively.

Conclusion. Most Filipino PLHIV have good QoL across all domains. While several factors were associated with good QoL including higher CD4 count and being on ARV for more than 3 months, presence of opportunistic infections, poor treatment adherence and low education were associated with poor QoL among patients with HIV infection.

Key Words: Quality of life, QoL, WHOQOL-HIV BREF, HIV/AIDS

INTRODUCTION

The human immunodeficiency virus (HIV) infection and its associated global pandemic of acquired immune deficiency syndrome (AIDS) have burdened the population with serious public health and socioeconomic challenges over the years.¹ According to the World Health Organization (WHO), HIV has affected nearly 37 million people worldwide as of 2017 with a global prevalence of 0.8% among adults aged 15–49 years old.²

The recent UNAIDS data suggest that Philippines has the fastest growing HIV epidemic worldwide.³ In February 2019, there were 1,013 newly confirmed HIV-positive individuals reported to the HIV/AIDS & ART Registry of the Philippines (HARP). At least 38 Filipinos are infected with HIV each day.⁴ The University of the Philippines-Philippine General Hospital STD/AIDS Guidance, Intervention and Prevention (UP-PGH SAGIP) Clinic, one of the largest HIV treatment hubs in the country where this study was conducted, has at least 3,294 active HIV cases as of December 2018.⁵

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Quality of life (QoL) is an important component in the evaluation of the wellbeing of People Living With HIV/AIDS (PLHIV). This disease has been transformed into a chronic condition, albeit one with no cure, making it important to assess determinants of QoL. It reflects the patient's perspective on various aspects of health, ranging from symptomatic to more complex concepts, such as social functioning or spirituality.⁶ The WHO defines QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns."⁷

The HIV/AIDS impact on QoL in the Philippines has not been well documented.⁸ Thus, we deemed it necessary to assess the different factors that affect the quality of life among Filipino patients diagnosed of HIV/AIDS. QoL baseline data has significant implications for social and public policy as it provides insights on the association between quality of life and risk factors. Ultimately, the study provides an avenue for health care reforms on HIV/AIDS program and improvement in HIV-related health services.

OBJECTIVES

This study was conducted to assess the quality of life among Filipino PLHIV enrolled at SAGIP Clinic, UP-PGH. It specifically aimed to determine the association of the following variables with QoL:

1. Socio-demographic profile
2. HIV disease-related factors
3. Quality of life domains: Physical health, psychological health, level of independence, social relationship, environmental health, and spirituality/ religion and personal beliefs

MATERIALS AND METHODS

This study was a single-center cross-sectional analytical study. The study participants were Filipino patients with HIV/AIDS, at least 18 years old, queuing up for follow-up consult or antiretroviral (ARV) drug refill, or for initial enrolment or link to care at SAGIP Clinic of UP-PGH. Using the mobile random number generator application, the mobile app randomly selects a number depending on how many numbers the investigator would want to generate from the total patients queuing up at the clinic. Five to Ten patients were recruited each day. The minimum sample size of 341 was generated using the Raosoft sample size formula calculated at 95% confidence level, 5% margin of error, and a response distribution of 50% (http://www.raosoft.com/sample_size.html). This study was conducted from January to April 2019.

This study utilized the locally validated, self-administered WHOQOL-HIV BREF questionnaire.⁹ It is a 31-item QoL assessment tool which explores six domains of the

quality of life: physical, psychological, level of independence, social relationship, environmental and spirituality. Answers were rated on a 5-point Likert scale from 1 to 5.^{7,10} (1- indicates low, negative perceptions - 5 indicates high, positive perceptions).

We reviewed the medical records for other variables of interest that were not asked in the questionnaire. These included dates of HIV ELISA, Western blot and SAGIP enrolment; CD4 count; HIV viral load; ARV regimen and treatment adherence; opportunistic infections, if any; and other socio-demographic data. We included only laboratory examination results that were taken within the last 6 months prior to conduct of the study. Only the investigators under the supervision of an authorized SAGIP unit staff had access to the needed data. In accordance with the SAGIP policies, the charts were not taken out of the premises of the unit. The fellow-in-charge was notified if his/her patient was enrolled in the study.

This study was approved by the PGH Review Panel and UP-Manila Research Ethics Board (UPMREB). Because of the sensitivity of HIV/AIDS condition giving the patient distinct vulnerabilities, only verbal informed consent was secured.¹¹ Participants were made aware that their records will be accessed for this study purpose. Patients' privacy was ensured when answering the questionnaire.

Data Analysis

Descriptive statistics was used to summarize the general and clinical characteristics of the participants. Frequency and proportion were used for nominal variables, median and range for ordinal variables, and mean and standard deviation for interval/ratio variables.

The scores for the six domains and general QoL was calculated according to the Manual for Scoring and Coding WHOQOL-HIV BREF. The domain scores ranged between 4 and 20, with 4 signifying the worst result and 20 signifying the best result. General QoL score ranges between 1 (very poor QoL) and 5 (very good QoL). General QoL scores was categorized into two groups; those with poor QoL and those with good QoL, using the median score of 3 as cut-off point.¹⁰

Bivariate analysis was performed between both domain-specific and general QoL and each of the factors of interest. Independent sample T-test, Wilcoxon rank sum test and Fisher's exact/Chi-square test was used to determine the difference of mean, median and frequency between groups, respectively.

Beta coefficients and the corresponding 95% confidence interval from linear regression was computed to determine the association between selected patient characteristics and QoL scores. All valid data were included in the analysis. Missing variables were neither replaced nor estimated. The assumptions of simple linear regression were checked for all variables. Level of significance was set at 5%. STATA 15.0 was used for data analysis.

RESULTS

We recruited a total of 358 HIV-seropositive patients who were enrolled in the SAGIP clinic of UP-PGH. Eleven patients refused participation while six of them did not answer the questionnaire completely and were excluded. Only 341 patients were included in the final analysis.

Overall, the median age was 32 years, and respondents were mostly male (93.55%), and single (81.23%). Nearly eight of ten patients were college degree holders and were currently employed. Majority had good general QoL (58.6%). When we compared those with good versus poor general quality of life scores, they were significantly different in terms of educational attainment. There was a higher proportion of college degree holders in the good QoL group compared to the low QoL group (83% vs 67%, $p = 0.017$). Age, sex, marital status, and employment status were similar between groups (Table 1).

The two QoL groups were significantly different in terms of duration of HIV diagnosis, SAGIP enrollment, ARV regimen, current illness, and patients' perception of current health status. Those with good QoL scores have been diagnosed with HIV far longer in months (41 vs 31 months, $p = 0.005$), have been linked to SAGIP for longer months (32.5 vs 21 months, $p = 0.003$), and have higher CD4 counts (median of 433 vs 336 cells/ul, $p = 0.024$). Although a higher proportion of patients with poor QoL was significantly observed among those on lamivudine (3TC)/Tenofovir (TDF)/Efavirenz (EFV) combination 128

(75% vs 81%, $p = 0.003$), there was no significant difference when antiretroviral drugs were categorized into efavirenz-, nevirapine-, or protease inhibitor-based regimen. We noted a higher proportion of those with poor treatment adherence in the poor QoL group (14.93% vs 5.64%, $p = 0.005$). Those who reported to be currently ill during the study period had poorer QoL (23% vs 47.52%, $p = <0.001$). Patients' perception of their current health status similarly correlated with QoL score ($p = <0.001$). There was insufficient evidence to demonstrate a difference in terms of categorized CD4 count, HIV viral load, clinical stage, route of transmission, ARV regimen, and concurrent opportunistic infections (Table 2).

Table 3 provides the average QoL scores across domains. The general QoL score of > 3 and the domain scores of > 12 is classified as good QoL.^{7,10} The overall QoL scores were generally good (mean general QoL score, 3.57 ± 0.9). Physical domain score got the highest score (mean, 15.35 ± 2.83), while the spirituality/personal beliefs domain had the lowest score (mean, 14.26 ± 3.25).

Regression analysis showed that except for age, categorized ARV regimen and HIV viral load, all other factors examined were associated with at least one QoL domain (Table 4). For example, being female [β CoE -1.328; 95% CI: -2.49 147 to -0.17; $p = 0.025$] and being unemployed (β CoE -0.99; 95% CI: -1.69 to -0.29; $p = 0.006$) were associated with poor QoL on environment and independence domains, respectively. However, these two variables were not correlated with the general QoL score.

Table 1. Socio-Demographic profile of HIV patients (n = 341)

	Total (n=341)	Good QoL (n=200)	Poor QoL (n=141)	p-value
	Median (Range); Frequency (%)			
Age, years	32 (19-70)	33 (19-70)	31 (19-57)	0.165*
19-30	143 (41.9)	78 (39)	65 (46.1)	
31-40	143 (41.9)	86 (43)	57 (40.4)	
41-50	38 (11.1)	21 (10.5)	17 (12.1)	
51-70	17 (4.9)	12 (6)	5 (3.5)	
Sex				0.316†
Male	319 (93.5)	190 (95)	129 (91.5)	
Female	22 (6.4)	10 (5)	12 (8.5)	
Marital status				0.410†
Single	277 (81.2)	166 (83)	111 (78.7)	
Living together	38 (11.1)	19 (9.5)	19 (13.5)	
Married	17 (4.9)	11 (5.5)	6 (4.3)	
Separated/Divorced	8 (2.4)	4 (2)	4 (2.8)	
Widow/widower	1 (0.3)	0 (0)	1 (0.7)	
Education				0.017†
No education	1 (0.3)	0 (0)	1 (0.7)	
Elementary	5 (1.5)	2 (1)	3 (2.1)	
Secondary	51 (14.9)	23 (11.5)	28 (19.9)	
Vocational	22 (6.4)	8 (4)	14 (9.9)	
College/postgraduate	262 (76.8)	167 (83.5)	95 (67.4)	
Employment status				0.075†
Employed	249 (73)	153 (76.5)	96 (68.1)	
Unemployed	92 (26.9)	47 (23.5)	45 (31.9)	

Statistical tests used: * Wilcoxon rank sum test; † Chi-square test/ Fisher's exact test

Table 2. Clinical profile of HIV patients (n = 341)

	Total (n=341)	Good QoL (n=200)	Poor QoL (n=141)	p-value
	Median (Range); Frequency (%)			
<i>HIV diagnosis, months</i>	35 (<1 - 136)	41 (<1 - 136)	31 (<1 - 108)	0.005*
<i>SAGIP enrollment, months</i>	27 (<1 - 136)	32.5 (<1- 136)	21 (<1 - 107)	0.003*
CD4 [n=332]	388 (0 - 1,334)	433 (0 - 1,067)	336 (0 - 1,334)	0.024*
<200	80 (24.1)	42 (21.3)	38 (28.2)	0.153 [†]
≥200	252 (75.9)	155 (78.7)	97 (71.8)	
HIV viral load [n=214]				0.537 [†]
Undetected ≤34	164 (76.6)	104 (78.2)	60 (74.1)	
>34 - 1000	18 (8.4)	9 (6.8)	9 (11.1)	
>1000	32 (14.9)	20 (15)	12 (14.8)	
Clinical stage				0.562 [†]
Stage 1	192 (56.3)	119 (59.5)	73 (51.8)	
Stage 2	35 (10.3)	19 (9.5)	16 (11.4)	
Stage 3	56 (16.4)	31 (15.5)	25 (17.7)	
Stage 4	58 (17)	31 (15.5)	27 (19.2)	
Perceived route of transmission				0.346 [†]
Homosexual	265 (77.7)	159 (79.5)	106 (75.2)	
Heterosexual	44 (12.9)	21 (10.5)	23 (16.3)	
Bisexual	24 (7)	13 (6.5)	11 (7.8)	
Drug use	6 (1.8)	5 (2.5)	1 (0.71)	
Blood transfusion	1 (0.3)	1 (0.5)	0 (0)	
Occupational exposure	1 (0.3)	1 (0.5)	0 (0)	
ARV Regimen				0.003[†]
3TC/TDF/EFV	264 (77.4)	150 (75)	114 (80.8)	
3TC/AZT/EFV	26 (7.6)	23 (11.5)	3 (2.1)	
3TC/AZT/NVP	13 (3.8)	10 (5)	3 (2.1)	
AZT/3TC/TDF/LPV/r	8 (2.4)	2 (1)	6 (4.3)	
3TC/AZT/LPV/r	11 (3.2)	5 (2.5)	6 (4.3)	
3TC/TDF/LPV/r	5 (1.5)	4 (2)	1 (0.7)	
Not on ARV yet	12 (3.5)	5 (2.5)	7 (4.9)	
Others	2 (0.6)	1 (0.5)	1 (0.7)	
ARV (categorized) [n=328]				0.894 [†]
Efavirenz-based	290 (88.4)	173 (89.2)	117 (87.3)	
Nevirapine-based	13 (3.9)	10 (5.2)	3 (2.2)	
PI-based	24 (7.3)	12 (6.2)	12 (8.9)	
ARV duration				0.107 [†]
Not on ARV yet	12 (3.5)	5 (2.5)	7 (4.9)	
≤3 months	37 (10.8)	16 (8)	21 (14.9)	
4-12 months	48 (14.1)	28 (14)	20 (14.2)	
>1 year	244 (71.6)	151 (75.5)	93 (65.9)	

Patients who had CD4 count of > 200 had a significantly higher score (P=0.043) in terms of general QoL and independence, while ARV duration longer than three months was associated with higher scores (P=0.022) in the general QoL specifically on physical, psychological, independence, and spirituality domains. Patients who had low education had significantly lower scores (P = <0.001) across all domains. Poor treatment adherence (those whose adherence was less than 95%) was associated with lower QoL scores overall and across domains. Those with opportunistic infections, on the other hand, had lower scores in terms of general QoL, physical, psychological, and independence domains (Table 4).

Overall, regression analysis showed that the factors positively associated with general QoL score were CD4 ≥ 200 cells/μL (βCoE 0.218; 95% CI: 0.01 to 0.43; p = 0.043), and

ARV duration > 3 months (βCoE 0.333; 95% CI: 0.05-0.62, p = 0.022). Conversely, low education (βCoE -0.379; 95% CI: -0.59 to -0.17, p = <0.001), poor treatment adherence (βCoE -0.752; 95% CI: -1.05 to -0.45 p = <0.001), and presence of opportunistic infections (βCoE -0.187; 95% CI: -0.37 to 0; p = 0.049) were negatively associated with general QoL score.

DISCUSSION

The results of our study indicate that Filipino PLHIV generally have good quality of life in the general and six domain-specific QoL scores, such as physical, psychological, level of independence, social relationship, environment, and spirituality. Factors positively associated with general QoL scores were CD4 ≥200 cells/μL and ARV duration

Table 2. Clinical profile of HIV patients (n = 341) (continued)

	Total (n=341)	Good QoL (n=200)	Poor QoL (n=141)	p-value
	Median (Range); Frequency (%)			
ARV Treatment Adherence (n=329)				0.005[†]
Good	298 (90.6)	184 (94.4)	114 (85.1)	
Poor	31 (9.4)	11 (5.6)	20 (14.9)	
With concurrent opportunistic infections[‡]	117 (34.3)	64 (32)	53 (37.6)	0.284 [†]
PTB	47 (13.8)	28 (14)	19 (13.5)	
EPTB	29 (8.5)	14 (7)	15 (10.7)	
Oral Candidiasis	14 (4.1)	10 (5)	4 (2.8)	
PCP	11 (3.2)	3 (1.5)	8 (5.7)	
Anogenital Warts	5 (1.5)	4 (2)	1 (0.7)	
Cryptococcal Meningitis	3 (0.9)	1 (0.5)	2 (1.4)	
CMV Retinitis	2 (0.6)	1 (0.5)	1 (0.7)	
Others	6 (1.8)	3 (1.5)	3 (2.1)	
Currently ill (self-reported)	113 (33.14)	46 (23)	67 (47.52)	<0.001[†]
Perceived health status				<0.001[†]
Very poor	1 (0.3)	0 (0)	1 (0.7)	
Poor	5 (1.5)	0 (0)	5 (3.6)	
Neither	64 (18.8)	19 (9.5)	45 (31.9)	
Good	198 (58.1)	116 (58)	82 (58.2)	
Very good	73 (21.4)	65 (32.5)	8 (5.7)	

Statistical tests used: * - Wilcoxon rank sum test; † - Chi-square test/ Fisher's exact test

[‡] Treatment adherence is based on the records of the course from the start of ARV to present (regardless of the timeline); Good - $\geq 95\%$ adherence; Poor - $< 95\%$ adherence

[‡] Opportunistic infections among HIV patients are mostly on maintenance phase of treatment; Other OIs (n=7) include 1 case each of syphilis, herpes zoster, lymphoma, kaposi's sarcoma, NTM infection, and toxoplasmosis

[†] 3TC- lamivudine, TDF - tenofovir, EFV - efavirenz, AZT - zidovudine, NVP - nevirapine, LPV/r - lopinavir-ritonavir

> 3 months. Conversely, low education, poor treatment adherence and presence of opportunistic infections were negatively associated with general QoL scores.

CD4 cell count is one of the indicators of disease progression in HIV/AIDS and therefore can potentially influence a person's self-perception of QoL. Our study showed that patients who had CD4 count of > 200 had a significantly higher score in terms of general QoL and level of independence. Similar study done in one treatment hub in the Philippines found a strong positive correlation between CD4 count and QoL in all six domains.⁸ Karkashadze et al., Degroote et al., and Handajani et al. found a positive association between higher CD4 level and better general QoL.¹²⁻¹⁴ This was also true for the physical, environment, and spirituality domains for Karkashadze's study.¹²

Considering that majority of the study participants were already on antiretroviral therapy, we therefore determined whether the duration of ARV treatment was associated with QoL. Our result revealed that patients with ARV duration of more than three months had a significantly higher QoL score in terms of the general, physical, independence and spirituality domains. It is worthy to note though, in the earliest months of treatment, patients may have been burdened not only with HIV diagnosis but also with some opportunistic infections and more pill burden, clinic visits, and laboratory tests. This may have a role in the poor performance of QoL during this time frame.

There was no sufficient evidence to show association of ARV duration with the social relationship and environ-

Table 3. Quality of Life domain scores

	Mean \pm SD
General QoL	3.57 \pm 0.9
Physical domain	15.35 \pm 2.83
Psychological domain	14.99 \pm 2.79
Level of Independence domain	14.3 \pm 2.94
Social relationship domain	14.52 \pm 3.08
Environment domain	14.63 \pm 2.7
Spirituality/Personal beliefs domain	14.26 \pm 3.25

mental health domains probably because Filipinos have strong ties among their families and friends, and support one another no matter what they are going through. Most of these patients have described their denial at the beginning of their diagnosis and were hesitant to disclose their identity but were eventually able to overcome the fear and stigma later when they were under the care of the treatment hub. The support system was eventually regained especially with family and friends.

Previous studies showed inconsistent results for the association between ARV treatment and QoL. In a study by Karkashadze et al., and by Ming et al., those patients receiving ARV tend to have better QoL.^{12,15} In contrast, Razera et al. found that HIV-infected Brazilians receiving ARV treatment had poorer general QoL as compared to those not receiving the treatment.¹⁶ Likewise, among HIV patients of European descent, ARV treatment did not appear to have an effect on QoL.^{17,18} Previous studies, however, only looked into whether patients were on ARV

Table 4. Association of selected socio-demographic and clinical characteristics with QoL of Filipino HIV patients (n = 341)

	General QoL	Physical	Psychological	Independence	Social	Environment	Spirituality
	Beta coefficient (95% CI)						
Age							
<35 [n=213]							
≥35 [n=128]	0.027	0.479	0.338	0.322	-0.138	0.194	0.22
	(-0.16, 0.21)	(-0.14 - 1.1)	(-0.28 - 0.95)	(-0.33 - 0.97)	(-0.82 - 0.54)	(-0.4 - 0.79)	(-0.5 - 0.94)
p-value	0.777	0.13	0.28	0.329	0.688	0.522	0.546
Gender							
Male [n=319]							
Female [n=22]	-0.269	-1.005	-1.057	-0.66	0.08	-1.328	-1.105
	(-0.63 - 0.09)	(-2.23 - 0.22)	(-2.26 - 0.15)	(-1.94 - 0.62)	(-1.26 - 1.42)	(-2.49 - -0.17)	(-2.51 - 0.3)
p-value	0.146	0.107	0.086	0.31	0.906	0.025	0.123
Education*							
High [n=262]							
Low [n=79]	-0.379	-0.8	-1.149	-1.164	-0.837	-1.264	-1.394
	(-0.59 - -0.17)	(-1.51 - -0.09)	(-1.84 - -0.45)	(-1.9 - -0.43)	(-1.61 - -0.06)	(-1.93 - -0.59)	(-2.2 - -0.59)
p-value	<0.001	0.027	0.001	0.002	0.034	<0.001	0.001
Employment status							
Employed [n=249]							
Unemployed [n=92]	-0.148	-0.463	-0.64	-0.99	-0.41	0.586	-0.298
	(-0.35 - 0.05)	(-1.14 - 0.21)	(-1.3 - 0.03)	(-1.69 - -0.29)	(-1.15 - 0.33)	(-1.23 - 0.06)	(-1.08 - 0.48)
p-value	0.148	0.180	0.06	0.006	0.276	0.075	0.454
CD4							
<200 [n=80]							
≥200 [n=252]	0.218	0.674	0.605	1.204	-0.215	0.119	0.327
	(0.01 - 0.43)	(-0.02 - 1.37)	(-0.09 - 1.3)	(0.48 - 1.93)	(-0.99 - 0.56)	(-0.56 - 0.8)	(-0.49 - 1.14)
p-value	0.043	0.058	0.089	0.001	0.588	0.731	0.432
Opportunistic infection							
No [n=224]							
Yes [n=117]	-0.187	-0.687	-0.688	-1.067	-0.057	-0.025	-0.15
	(-0.37 - 0)	(-1.32 - 0.06)	(-1.31 - -0.06)	(-1.72 - -0.42)	(-0.75 - 0.63)	(-0.58 - 0.63)	(-0.88 - 0.58)
p-value	0.049	0.033	0.031	0.001	0.871	0.936	0.686
ARV							
EFV-based [n=290]							
Non-EFV-based [n=39]	-0.069	-0.628	-0.804	-0.487	-0.299	-0.606	0.165
	(-0.35 - 0.21)	(-1.57 - 0.31)	(-1.74 - 0.13)	(-1.47 - 0.5)	(-1.32 - 0.73)	(-1.51 - 0.3)	(-0.92 - 1.25)
p-value	0.628	0.188	0.093	0.332	0.566	0.189	0.764
ARV duration [n=329]							
≤3 months [n=37]							
>3 months [n=292]	0.333	1.332	1.123	1.402	0.248	0.823	1.12
	(0.05 - 0.62)	(0.38 - 2.28)	(0.17 - 2.08)	(0.4 - 2.4)	(-0.8 - 1.3)	(-0.1 - 1.75)	(0.02 - 2.22)
p-value	0.022	0.006	0.022	0.006	0.642	0.082	0.046
ARV adherence (n=329)							
Good (n=298)							
Poor [n=31]	-0.752	-1.859	-1.958	-1.636	-1.165	-1.426	-1.289
	(-1.05 - -0.45)	(-2.88 - -0.84)	(-2.98 - -0.94)	(-2.71 - -0.56)	(-2.29 - -0.04)	(-2.42 - -0.43)	(-2.48 - -0.1)
p-value	<0.001	<0.001	<0.001	0.003	0.043	0.005	0.034
Viral load							
Undetected [n=164]							
Detectable [n=50]	-0.083	-0.334	-0.338	-0.171	0.052	-0.174	0.272
	(-0.34 - 0.18)	(-1.18 - 0.51)	(-1.16 - 0.48)	(-1.05 - 0.71)	(-0.94 - 1.05)	(-1.03 - 0.69)	(-0.78 - 1.33)
p-value	0.533	0.438	0.419	0.702	0.918	0.691	0.611

*High educational attainment is at least a college degree

treatment or not. While our study specifically attempted to determine the difference in terms of treatment duration, previous studies did not try to describe such factor. Beneficial effects of ARV treatment on QoL might be explained by decreasing intensity of clinical symptoms of the disease. This translates to enhancement in the QoL.

Our study showed that a history of poor adherence to ART was associated with significantly lower scores in quality of life across all domains. This observation was consistent with previous studies.^{19,20} Another study by Galvao, et al., however, was not able to show this association.²¹ It is known that adherence to ART improves clinical results,

delays the progression of the disease, which in theory, should improve quality of life.²² Viral suppression, decreased contamination, minimization of opportunistic infections, and reduced resistance to antiretroviral agents depend on therapy adherence.²³ Although ART may produce adverse reactions, failure to comply with it may aggravate patients' health status and impair QoL. The QoL of individuals living chronically with HIV and AIDS has been considered one of the main treatment outcomes.¹⁹

A significant association was observed between education and QoL in our study. Across all domains of quality of life, low levels of education had significantly lower scores. This was consistent with the findings in studies among HIV patients in Georgia and Ghana^{12,24} and in developed countries.^{13,25} However, the relationship between education and general QoL was not documented in other studies.²⁶ Education potentially provides opportunities for employment and social support, and thus can contribute to a sense of good QoL. In our study, employment was not associated with the general QoL score, but it was associated with poor QoL in the independence domain, which explains that employment is an important part of daily living. For working individuals, employment provides not only financial benefits but may also be a source of structure, social support, role identity, and meaning.²⁷ This was implicated in prior studies with employment having a positive effect on QoL.^{13,28}

The presence of opportunistic infections is an important determinant of QoL as observed in the study of Degroote et al.¹³ Our study showed that the presence of opportunistic infections significantly predicted poor QoL, particularly in the level of independence domain. It should be noted that patients included in our study who had opportunistic infections were currently being treated for such. They were mostly on maintenance phase, especially for patients with TB of any form. In addition, patients were already clinically stable at the time of enrollment to the study.

Our study did not show age as a significant factor to QoL across all domains. This finding explains that HIV-related stress level and tolerance may not be related with age. However, it is important to understand that older people may have worse QoL due to the factors related to aging such as physical conditions, or fears about the future as observed among patients in Georgia with HIV.¹² Our study showed that being female was associated with poor QoL in the environmental health domain, probably because women are more confined to the home environment, with low financial resources and decreased opportunities for recreational and/or leisure activities. While some previous studies showed this association and general QoL differed across both gender and age categories.^{13,24,25,29,30} Other studies, however, showed no significant difference.^{27,28}

Our study has several limitations. First, our study participants were recruited from a single treatment hub, which may have increased the possibility of selection bias or decreased generalizability. Second, there was missing

information on some important variables, such as CD4 count and HIV viral load in a small proportion (2.6%) of the patients' records. These factors may have somehow influenced our study results. The 2.6% missing cd4 or HIV viral load may potentially alter the results of the study in its final analysis. Third, being a cross-sectional study design, the inability to demonstrate temporality of the associations observed in our study results limits its ability to infer causality. Fourth, several physicians and consultants were involved in the documentation of patients' records especially on disease-related factors. This is considered as part of interobserver variability that has to be considered in interpreting the study results. It may raise a veiled disguise for a lack of credence in truthfulness of the data reported. On a positive note, though, obtaining data from medical records may decrease the possibility of information bias.

Our study has several strengths. We utilized two methods of data collection, questionnaire and review of records. While we recognized that some variables such as CD4 count may vary over time, we ensured that these data should have been at least taken within the last six (6) months prior to review for it to be included. We utilized a locally validated instrument. This was one strength of our study as this eliminated language barrier issues. This self-administered assessment tool also decreased the potential for social desirability bias, which is more likely to be present when participants encounter face-to-face interviews which was observed in one study.³¹

To our knowledge, our study is the first project in the Philippines to have extensively included several sociodemographic and HIV disease-related factors in the determination of association with quality of life. These QoL baseline data have significant implications for social and public policy as they provide insights on the relationship between quality of life and risk factors. Ultimately, the study provides an avenue for health care reforms on HIV/AIDS program and quality improvement in HIV-related health service delivery.

Our study highlights the importance not only of patient education but also of addressing the needs of those at risks for poorer quality of life such as those with concurrent opportunistic infections. It, likewise, emphasizes the relevance of enhancing adherence programs to ARV treatment. As clinicians, addressing these potential risk factors of quality of life is tantamount to achieving quality patient care not only in terms of physical health but also for mental and social health point of view.

CONCLUSION AND RECOMMENDATIONS

Majority of Filipino PLHIV have good quality of life. HIV-seropositive patients with high CD4 count and on ARV treatment for > 3 months are more likely to have good QoL while low education and presence of concurrent opportunistic infection are associated with poor QoL. Female sex and unemployment were associated with poor

QoL in at least one QoL domain but had insufficient evidence to establish correlation with the general QoL. There was also insufficient evidence to demonstrate statistically significant differences across QoL domains in terms of age, categorized ARV regimen and HIV viral load.

Our study serves as baseline data for future QoL studies among Filipino PLHIV patients involving larger samples and multiple treatment hubs throughout the country. As clinicians in direct care of PLHIV, it is very important to recognize these potential factors that may affect patient's QoL. Educating patients on the disease process and how to avoid complications such as opportunistic infections through regular follow up consults and religious adherence to their medications are the simplest ways to help them achieve quality of life.

Government health care reforms should likewise include strategies to improve QoL, such as but not limited to, intensification of information, education and communication regarding HIV/AIDS, strategies to improve patient's adherence to antiretrovirals, strategies to promote community engagement among PLHIV harmonizing social acceptance, strategies for HIV/AIDS de-stigmatization and eliminating discrimination, and enhancement of government support to PLHIV in terms of financial productivity.

Statement of Authors

Both authors participated in the data collection and analysis and approved the final version submitted.

Author Disclosure

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