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ORIGINAL PAPER

QUALITY OF LIFE OF HIV OUTPATIENTS TAKING ANTIRETROVIRAL TREATMENT: A CROSS-SECTIONAL STUDY IN A RESTRICTED RESOURCE SETTING OF VIETNAM

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Abstract

Background. Quality of life (QoL) is an important indicator to assess perception of human immunodeficiency virus (HIV)-infected patients towards their life. In addition, it is also an important medical decisive factor and a predictor of treatment success.
The objective of the study was to assess the QoL and factors regarding social and treatment characteristics of HIV-infected outpatients taking antiretroviral (ARV) treatment.
Materials and methods. We performed a descriptive cross-sectional study on 219 HIV-infected outpatients at Hau Nghia Regional General Hospital, Vietnam, from November 2023 to May 2024, using a structured interview questionnaire based on the WHOQoL-HIV BREF scale developed by World Health Organization, with Cronbach's alpha coefficient of

Résumé

Qualité de vie des patients ambulatoires avec VIH infection sous traitement antirétroviral: une étude transversale dans un contexte à ressources limitées au Vietnam

Introduction. La qualité de vie (QdV) est un indicateur important pour évaluer la perception qu'ont les patients infectés par le VIH de leur existence. Elle constitue également un facteur médical déterminant et un prédicteur de la réussite du traitement.
L'objectif de cette étude était d'évaluer la QdV et les facteurs liés aux caractéristiques sociales et thérapeutiques des patients ambulatoires infectés par le VIH et sous traitement **antirétroviral (ARV).**
Matériel et méthodes. Nous avons mené une étude descriptive transversale auprès de 219 patients

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0.87. Furthermore, social demographic information and treatment characteristics of each patient were also collected.

Results. Outpatients living with HIV had the average QoL score of 14.27±1.43, with males scoring 14.24±1.54 and females 14.44±1.21. Multivariate analysis showed significant relationships between the poor QoL scores and associated factors including lower education (AOR = 1.461, p<0.001), single status (AOR = 3.487, p<0.001), underweight (AOR = 0.164, p = 0.015) and side effects of ARV treatment (AOR = 6.056, p = 0.01).

Conclusions. The findings of our study may serve as the baseline data for follow-up intervention programs aimed at enhancing the QoL for outpatients living with HIV.

Keywords: ARV, HIV, outpatients, quality of life.

List of abbreviations:
QoL: quality of life
HIV: human immunodeficiency virus
ARV: antiretroviral
AIDS: acquired immunodeficiency syndrome
BMI: body mass index
AIC: Akaike's Information Criterion
AOR: Adjusted Odds Ratio

Résumé

Introduction. Cette étude a évalué la qualité de vie (QdV) des patients ambulatoires infectés par le VIH à l'Hôpital Général Régional de Hau Nghia, au Vietnam, de novembre 2023 à mai 2024. Un questionnaire d'entretien structuré, basé sur l'échelle WHOQoL-HIV BREF développée par l'Organisation Mondiale de la Santé (coefficient alpha de Cronbach: 0,87), a été utilisé. Des informations sociodémographiques et les caractéristiques du traitement de chaque patient ont également été recueillies.

Résultats. Les patients ambulatoires vivant avec le VIH présentaient un score de qualité de vie (QdV) moyen de 14,27±1,43, avec un score de 14,24±1,54 chez les hommes et de 14,44±1,21 chez les femmes. L'analyse multivariée a révélé des corrélations significatives entre les faibles scores de QdV et des facteurs associés, notamment un faible niveau d'instruction (AOR = 1,461, p < 0,001), le célibat (AOR = 3,487, p < 0,001), l'insuffisance pondérale (AOR = 0,164, p = 0,015) et les effets secondaires du traitement antirétroviral (AOR = 6,056, p = 0,01).

Conclusions. Les résultats de notre étude peuvent servir de données de référence pour les programmes d'intervention de suivi visant à améliorer la QdV des patients ambulatoires vivant avec le VIH.

Mots-clés: ARV, VIH, patients ambulatoires, qualité de vie

Introduction

In 2021, the number of people living with human immunodeficiency virus (HIV) globally reached 38.4 million, a significant increase from 26.0 million in 2000[1]. In Vietnam, 213,833 people were living with HIV, and by the end of 2021, 110,990 cumulative deaths from HIV/acquired immunodeficiency syndrome (AIDS) had been recorded[2]. The expansion of antiretroviral (ARV) therapy has improved patient health and reduced transmission, opportunistic infections, and mortality[3-5]. As life expectancy for patients increases, the long-term impact of HIV on their quality of life (QoL) becomes a critical concern[6]. QoL assessment is a necessary indicator in HIV/AIDS management, used to evaluate treatment effectiveness and guide healthcare activities[7].

Long An province, located in the Southwest region of Vietnam, has experienced a rising incidence of new HIV infections[8]. In 2021, Long An reported 487 new cases, second only to Can Tho[2]. Hau Nghia Regional General Hospital in Long An serves a region where HIV is difficult to control because of numerous industrial zones and a complex geographical location bordering high-prevalence areas like Ho Chi Minh City (47,625 cases) and Cambodia (62,636 cases)[2,9,10]. Concurrently, the number of patients on ARV treatment in Vietnam has steadily increased, reaching 177,009 in 2023[11-13].

QoL is a multidimensional concept encompassing an individual's perception of their health, psychological state, and other life aspects[14]. Various QoL scales have been used in studies on adults, adolescents, and children, conducted on community samples or normal populations[15]. Recent studies using QoL measurements have been conducted using both qualitative, quantitative and mixed methods[16,17]. The most common patient groups are those with cancer, mental illness, heart diseases, gastrointestinal diseases, chronic obstructive pulmonary disease or asthma[16,18,19]. The WHOQoL-HIV BREF is specifically designed and validated for assessing QoL in HIV patients, demonstrating good to excellent internal consistency across diverse cultural contexts[20,21].

The objective of our study was (1) to describe the QoL scores of HIV-infected outpatients on ARV treatment using the WHOQoL-HIV BREF scale, and (2) to determine associations between these QoL scores and socio-demographic and treatment-related factors.

Table 1. Characteristics of study participants (n = 219)

Variables	*Categories*	*Frequency (%)*
Gender	Male	141 (64.4)
	Female	78 (35.6)
Age group (years)	≤ 35	72 (32.9)
	> 35	147 (67.1)
Education	Illiterate	17 (7.8)
	Primary	30 (13.7)
	Lower secondary	55 (25.1)
	Upper secondary	108 (49.3)
	Tertiary	9 (4.1)
Employment	Unemployed	46 (21.0)
	Worker/Farmer	107 (48.9)
	Self-employed	56 (25.6)
	Others	10 (4.6)
Marital status	Single	22 (10.0)
	Live with spouse/partner	116 (53.0)
	Divorced/Widow	81 (37.0)
Time since positive test result	< 3 years	14 (6.4)
	3 – 5 years	29 (13.2)
	> 5 years	176 (80.4)

Material and methods

Study design

A descriptive cross-sectional study was conducted from November 2023 to May 2024 at Hau Nghia Regional General Hospital, Vietnam. Participants were HIV-infected outpatients aged 18 years or older, who had been on ARV treatment for at least six months. Eligible patients could communicate in Vietnamese and provided informed consent. Patients with severe disease progression requiring hospitalization were excluded.

The sample size was estimated based on the formulation applied ($n \geq [Z_{(1-\alpha/2)} \times \delta]^2 : d^2$) where:

- n: sample size.
- $z_{(1-\alpha/2)}$: confidence coefficient, with a value of 1.96 ($\alpha = 0.05$).
- δ: standard deviation, $\delta = 0.42$ (according to Asrat et al.[21]).
- d: desired accuracy (d = 0.06).

Therefore, the sample size was determined to be at least 189 participants. With a pilot study sample of 30, the total sample size of this study was 219 patients. Participants were recruited via convenience sampling during their scheduled follow-up visits.

Study measures

The socio-demographic information included gender, age group (≤35 yo vs. >35 yo), education level, occupation, marital status, perceived stigma and discrimination (yes/no), family support (yes/no), and willingness to disclose their status (yes/no).

Treatment characteristics included treatment duration (≤5 years vs. >5 years), body mass index (BMI), ARV-related side effects (yes/no), and treatment adherence, collected from medical records.

QoL was measured using the 31-item WHOQoL-HIV BREF scale, which covers six domains: physical, psychological, level of independence, social relationships, environment, and spirituality/religion/personal beliefs. Items are rated on a 5-point Likert scale, with some items reverse-scored. Domain scores are transformed to a 4-20 scale, where higher scores indicate better QoL[23,24]. In this study, overall QoL was categorized as poor (<10) or good (≥10)[25].

Data collection

Three trained medical staff from the hospital conducted data collection using a structured questionnaire administered via Google Forms. The validated Vietnamese version of the WHOQoL-HIV BREF questionnaire was used with the original author's permission. Investigators explained the study objectives to participants, who provided written informed consent before the 30-minute interview.

Data analysis

Descriptive statistics (frequencies, percentages, means/SD, medians/IQR) were used to summarize participant characteristics and QoL scores. The

Table 2. Scores of quality of life in HIV/AIDS-infected patients taking ARV treatment by sex

Variable	*Total (n = 219)*	*Male (n = 141)*	*Female (n = 78)*	*p-value*
Physical health	13.81 ± 2.56	14.07 ± 2.58	13.34 ± 2.45	0.045
Psychological health	14.47 ± 2.40	14.46 ± 2.44	14.50 ± 2.36	0.906
Level of independence	13.84 ± 2.11	13.87 ± 2.18	13.79 ± 2.00	0.796
Social relationships	14.37 ± 2.28	14.07 ± 2.42	14.92 ± 1.90	0.009
Environment	14.15 ± 2.16	13.98 ± 2.21	14.45 ± 2.05	0.123
Spirituality, religion, and personal beliefs	15.27 ± 2.03	15.01 ±2.26	15.74 ± 1.44	0.011
Overall QoL	14.27 ± 1.43	14.24 ± 1.54	14.44 ± 1.21	0.340

Table 3. Univariate analysis for associated factors of QoL among HIV-infected outpatients

Factors	*Poor QoL*	*Good QoL*	*OR (95% CI)*	*p-value*
Age (years)				
≤ 35	48 (66.7)	24 (33.3)	0.88 (0.48 – 1.61)	0.68
> 35	102 (69.4)	45 (30.6)		
Gender				
Female	55 (70.5)	23 (29.5)	1.15 (0.63 – 2.11)	0.63
Male	95 (67.4)	46 (32.6)		
Education				
< Upper secondary	76 (74.5)	26 (25.5)	1.69 (0.94 – 3.04)	0.07
≥ Upper secondary	74 (63.2)	43 (36.8)		
Marital status				
Single/ Divorced/ Widow	77 (74.8)	26 (25.2)	1.74 (0.97 – 3.12)	0.06
Live with spouse/partner	73 (62.9)	43 (37.1)		
Occupation				
Unemployed	34 (73.9)	12 (26.1)	1.39 (0.67 – 2.89)	0.37
Employed	116 (67.1)	57 (32.9)		
Stigma and discrimination				
Yes	91 (65.5)	48 (34.5)	0.67 (0.36 – 1.24)	0.20
No	59 (73.8)	21 (26.3)		
Family support				
No	76 (74.5)	26 (25.5)	1.69 (0.94 – 3.04)	0.07
Yes	74 (63.2)	43 (36.8)		
Is ready to report illness				
No	105 (68.6)	48 (31.4)	1.02 (0.54 – 1.89)	0.94
Yes	45 (68.2)	21 (31.8)		
HIV-infected duration				
< 5 years	34 (79.1)	9 (20.9)	1.95 (0.88 – 4.34)	0.09
≥ 5 years	116 (65.9)	60 (34.1)		
BMI category				
Underweight	28 (77.8)	8 (22.2)	1.75 (0.75 – 4.06)	0.19
Normal	122 (66.7)	61 (33.3)		
Side effects of ARV				
No	107 (64.8)	58 (35.2)	0.47 (0.22 – 0.98)	0.04
Yes	43 (79.6)	11 (20.4)		
Treatment adherence				
No	47 (70.1)	20 (29.9)	1.11 (0.59 – 2.08)	0.72
Yes	103 (67.8)	49 (32.2)		

Table 4. Logistic regression analyses for associated factors of QoL among HIV-infected patients

Model	*B*	*SE*	*Wald*	*AOR (95% CI)*	*p-value*
Education (Reference £ upper secondary)	15,739	0.778	409.200	1.461 (3.180 – 6.714)	<0.001
Marital status (Reference = single)	14,869	0.877	365.098	3,487 (1.526 – 12.213)	<0.001
Stigma and discrimination (Reference = Yes)	-0.440	0.614	0.514	0.644 (0.194 ± 2.144)	0.473
Family support (Reference = Yes)	0.883	0.778	1.289	2.419 (0.527 ± 11.110)	0.256
HIV-infected duration (Reference £ 5 years)	-0.574	0.507	1.281	0.563 (0.208 ± 1.522)	0.258
BMI category (Reference = underweight)	-1.808	0.745	5.888	0.164 (0.038 ± 0.706)	0.015
Side effects of ARV (Reference = Yes)	1.801	0.696	6.700	6,056 (1.549 ± 23.684)	0.010
Constant	-1.904	0.877	4.714		0.030

Shapiro-Wilk test assessed the normality of QoL scores. The Wilcoxon test was used to examine gender differences in QoL. Binary logistic regression was used to identify factors associated with overall QoL. Variables with a p-value < 0.2 in univariable models were included in a multivariable model, which was optimized using Akaike's Information Criterion (AIC). Statistical significance was set at p<0.05.

Ethical considerations

The study was approved by the Council of Ethics in Biomedical Research, University of Medicine and Pharmacy at Ho Chi Minh City (No. 978/HĐĐĐ-DHYD, dated October 16, 2023) and the Board of Directors of Hau Nghia Regional General Hospital, Vietnam.

Results

Among the 219 participants, 64.4% were male, and the majority (67.1%) were over 35 years old. Nearly half (49.3%) had an upper secondary education. The most common occupations were worker/farmer (48.9%) and self-employed (25.6%). Over half (53%) were living with a spouse/partner. Most patients (80.4%) had been diagnosed with HIV infection for more than 5 years.

The mean overall QoL score was 14.27±1.43. The physical health domain had the lowest mean score (13.81±2.56), followed by the level of independence (13.84±2.11). Mean scores for physical health, social relationships, and spirituality were significantly different between males and females (p<0.05) (Table 2).

In the univariable model, patients without ARV side effects were less likely to have a poor QoL compared to those with side effects (OR=0.47; 95%CI: 0.22-0.98, p=0.04). No other variables showed a significant association with QoL in the univariable analysis (p>0.05) (Table 3).

The multivariable logistic regression analysis revealed several significant factors. Patients with a normal BMI had 0.164 times the odds of having a poor QoL (OR=0.164, 95% CI: 0.038 - 0.706), while patients experiencing ARV side effects had 6.056 times higher odds of a poor QoL (OR=6.056, 95% CI: 1.549 - 23.684). Patients with less than upper secondary education (OR=1.461, 95% CI: 3.18 – 6.714) and single patients (OR=3.487; 95% CI: 1.526 – 12.213) also had significantly higher odds of a poor QoL (p<0.001). Stigma, family support, and treatment duration were not statistically significant (p>0.05) (Table 4).

Discussion

This study highlights the QoL of HIV-infected outpatients in a resource-limited hospital setting in Long An province, Vietnam. The average QoL score (14.27) was lower than scores reported in studies from other parts of Vietnam and Spain (14.5 to 14.9)[20,21] and notably lower than a recent study in Ho Chi Minh City, a region with better economic conditions[26]. These differences may be attributable to variations in clinical settings, i.e. stage 3 or 4 of HIV infection, and socioeconomic factors.

Our study recorded the highest mean score in the spirituality/religion/personal beliefs domain (15.27±2.03), consistent with a 2009 study in India where this domain also scored highest[27]. This may reflect a tendency for individuals to turn to spirituality when facing significant life challenges[28]. However, this contrasts with another Indian study in 2020, where the level of independence domain scored

highest, potentially due to good medication adherence and access to treatment[29].

Our findings indicated that female patients generally reported higher QoL than males, with significant differences in several domains. An exception was physical health, where males scored higher (14.07 vs. 13.34). This aligns with a study where women had higher a psychological and religious QoL[30], but contrasts with other study where men scored higher in the spiritual domain[31]. Another study in 2018 conducted in western Ethiopia showed that gender did not have a significant impact on personal beliefs (15.7±3.2 for male, 15.5±3 for female)[32].

The study of Bach et al. (2012) in Vietnam found that men had better psychological and environmental scores, possibly linked to better employment opportunities[33]. Our finding of a poorer physical health QoL in women is consistent with other studies, potentially because pregnancy and childcare responsibilities can further impact the health of women living with HIV[32,34,35]. Despite these domain-specific differences, the overall QoL score between genders was not statistically significant, a finding also reported by Gebremichael et al. (2018) in Ethiopia[32].

In our multivariable model, a lower education level, being single, and experiencing ARV side effects were associated with a poor QoL. The link between lower education and poorer QoL is supported by studies in Georgia (2017) and Togo (2019)[36,37]. However, this association is not universal, as shown by other studies[17,38].

The finding that single patients had a poorer QoL than those with partners is consistent with previous research by Khademi et al.[31]. Married individuals or those in stable relationships often have greater social support, which is a key determinant of both mental and physical well-being, as demonstrated in previous studies[16,39].

Our study also showed a positive relationship between BMI and QoL. Participants with a normal BMI reported better QoL than those who were underweight, which aligns with previous findings[40]. Good nutrition improves the body's ability to fight infection and maintain a healthy lifestyle[41,42]. In contrast, changes in body appearance, such as wasting or lipodystrophy, can negatively affect body image and social engagement, thereby reducing QoL and potentially increasing the severity of HIV/AIDS symptoms[32,43].

Finally, experiencing ARV side effects was strongly associated with a poorer QoL[44,45]. Unwanted side effects of taking daily dose of ARV, an anti-HIV medication, can include headaches, insomnia, and digestive disorders can disrupt daily life and lead to decreased QoL[46,47]. Gastrointestinal issues, in particular, can be uncomfortable and may lead to non-adherence[47]. This underscores the importance of assessing and managing adverse reactions of ARV therapy in routine patient care.

The limitations of the study

This study was conducted using the QoL questionnaire of WHOQoL-BREF, in a relevant clinical setting. The data were directly collected through interviews and medical records, ensuring objectivity and transparency in the data collection process, result analysis and presentation. However, the use of descriptive cross-sectional study prevents any causal conclusions from being drawn. Furthermore, the convenience sampling method and single-center regional focus may limit the generalizability of the findings to other HIV populations. Future research should measure QoL in other vulnerable groups, such as HIV-infected children and pregnant women initiating ARV treatment.

Conclusions

Most HIV-infected patients in this study had relatively low QoL scores. QoL was significantly associated with education level, marital status, BMI, and the presence of ARV side effects. Policies that encourage comprehensive care—addressing not only medical treatment but also nutritional support, management of side effects, and psychosocial well-being—could significantly improve the QoL of people living with HIV.

Author Contributions:

Conceptualization, K.Q.H., Q.G.M.N, and V.H.L.; methodology, P.D.N. and V.H.L.; validation, T.N.T.; formal analysis, T.N.T., K.Q.H.; investigation, H.V.L, L.M.Q.D., ; data curation, K.Q.H. and Q.G.M.N.; visualization, V.H.L. and T.N.T.; writing–original draft preparation, L.M.Q.D., K.Q.H., T.N.T., L.M.Q.D., D.P.N., G.Q.M.N.; writing–review and editing, , L.M.Q.D., K.Q.H., T.N.T., L.M.Q.D., D.P.N., G.Q.M.N.; supervision, T.N.T. All authors have read and agreed to the published version of the manuscript.

Compliance with Ethics Requirements:

"The authors declare no conflict of interest regarding this article"

"The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study"

"The study was approved by the Council of Ethics in Biomedical Research, University of Medicine and Pharmacy

at Ho Chi Minh City (No. 978/HĐĐĐ-DHYD, dated October 16, 2023) and the Board of Directors of Hau Nghia Regional General Hospital".

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Availability of data and material:

The data that support the findings of this study are available from the corresponding authors (i.e., upon reasonable request).

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