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Health-Related Quality of Life of Patients with HIV/AIDS in Bogotá, Colombia

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ABSTRACT

Background: There has rarely been any reporting on health-related quality of life (HRQOL) of patients with HIV/AIDS in developing countries. **Objectives:** To estimate the health utilities of people with HIV/AIDS in Bogotá, Colombia. **Methods:** A cross-sectional survey was conducted for 181 patients receiving antiretroviral therapy from an outpatient HIV/AIDS clinic in Bogotá. The five-level version of the EuroQol five-dimensional questionnaire (EQ-5D-5L) and the EuroQol visual analogue scale (EQ-VAS) were used to estimate HRQOL scores. To derive utilities on the basis of the EQ-5D-5L, the Spanish value set was used. Subgroup analyses were performed according to sex, age, the Centers for Disease Control and Prevention classification, and CD4 cell count. **Results:** The mean utility of the EQ-5D-5L was estimated at 0.85 ± 0.21 and the EQ-VAS score was estimated at 84 ± 14. Pain/discomfort and anxiety/depression were the two EQ-5D-5L dimensions associated with the poorer outcomes. Subgroup analyses revealed significantly higher utilities (using the EQ-5D-5L) for men than for women (0.88 vs. 0.76; $P = 0.002$) and lower utilities for patients with severe HIV (0.83 for CD4 < 200 vs. 0.87 for CD4 ≥ 500; $P = 0.024$). **Conclusions:** The HRQOL scores of patients with HIV/AIDS receiving antiretroviral therapy were relatively high in Bogotá, Colombia, using the EuroQol questionnaire. The utility data could be useful, in combination with cost data, for future economic evaluations.

Keywords: AIDS, burden, Colombia, EQ-5D-5L, HIV, quality of life, utility.

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Introduction

There is scarcely any other virus that is as well known as the human immunodeficiency virus (HIV). Once this virus infiltrates a human being, it spreads through the whole body and leads to a failure of the immune system. The lack of an adequate immune system leaves the host unable to combat opportunistic infections and cancer. This clinical picture is known as acquired immunodeficiency syndrome (AIDS) [1]. With approximately 35 million people infected with the virus worldwide, it is a concern for every government. Although the number of newly infected people decreased worldwide from 3.4 million in 2001 to 2.3 million in 2012 [2], this positive trend does not apply in Colombia. According to the World Health Organization, in 2011 there were 150,000 people (0.5% of the adult population) infected with HIV in Colombia [3]. In 2010, HIV was one of the top four causes of burden of disease in Colombia [4]. Because of expanded access to antiretroviral therapies, people now live longer with the disease; as a consequence, the economic burden of HIV/AIDS is substantial in developing countries.

As in many other countries, the constrained health system of Colombia needs to become more efficient in terms of resource allocation [5]. Only recently the Colombian government acknowledged the need for evidence-based resource allocation, and in 2011 enacted by law its own health technology assessment agency [5]. To meet this challenge, more economic evaluations are needed to provide sufficient insights. Most of these analyses use quality-adjusted life-years (QALYs) to measure outcomes. To estimate QALYs, utility values for health states are needed. Health utilities result in one single value for health status ranging from 0 (corresponding to death) to 1 (corresponding to perfect health). Health utilities data for patients with HIV/AIDS have been reported mainly in the United States and in Western European countries [6,7]. Results from these studies are not easily transferable to developing countries such as Colombia.

In Colombia, we identified two studies with data on the health-related quality of life (HRQOL) of patients with HIV/AIDS. Using the Medical Outcome Study Short Form and the World Health Organization Quality of Life-Bref Scale (WHOQOL-BREF), the scores of HRQOL were estimated to range between 60.5 and

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90.2 for the HIV population in Medellín, Colombia [8]. Another study in Colombia showed an index score of 0.59 ± 0.178 measured via the HIV/AIDS-Targeted Quality of Life instrument, with higher results for patients receiving antiretroviral therapy [9]. Nevertheless, neither of these studies estimated the health utilities of patients with HIV/AIDS in Colombia using a utility instrument that could thereafter be used to estimate QALY. The EuroQol five-dimensional questionnaire (EQ-5D) is a utility instrument that is widely used in clinical trials (including those involving patients with HIV/AIDS) [10] and observational studies and has been translated into more than 20 languages. Recently, the EuroQol Group introduced a five-level version of the EQ-5D (EQ-5D-5L) [11]. This new version aims to improve the instrument's discriminatory potential [12] and has already been shown to have good psychometric properties for patients with HIV/AIDS [13]. The new version seems to be valid and reliable, and provides higher sensitivity to changes while remaining simple and user-friendly [12,14]. Several countries are at present developing a national EQ-5D-5L value set. Given the need for collecting health utilities data, the aim of this study was to collect health utilities data using the EQ-5D-5L and to estimate the EuroQol visual analogue scale (EQ-VAS) scores from people with HIV/AIDS in Bogotá, Colombia.

Methods

Population and Setting

A cross-sectional study was conducted with patients with HIV/AIDS at the Asistencia Cientifica de Alta Complejidad (Scientific Assistant of High Complexity) located in Bogotá, Colombia. All consecutive patients presenting with HIV/AIDS during the period of the survey were invited to participate. All patients were receiving antiretroviral therapy. Illiteracy or having limited cognitive abilities for filling in a questionnaire was a criterion for exclusion. The ethics committee of the Asistencia Cientifica de Alta Complejidad approved the study, and every participating patient signed the informed consent form before participating.

Data Collection

Two small pilot studies, with 4 and 12 patients, respectively, were conducted consecutively. The questions were easily understood by most of the participants, and physicians were available to answer any queries. The questionnaire was handed out to patients during their mandatory monthly visit, between May and June 2014. The patients filled out the questionnaire in the waiting room right before the consultation, or during it, making it possible to resolve any uncertainties immediately. The information provided by the completed questionnaires was complemented with information from the database of the clinic, covering information such as sex, age, and HIV/AIDS status. The patient's identification number was used to connect the information from the questionnaire with the database.

Measurement and Evaluation of HRQOL

The quality-of-life data were collected with the Spanish version (for Spain) of the EQ-5D-5L. This questionnaire has been validated for Spain and several other Spanish-speaking countries such as Colombia. It is a generic instrument and is the most widely used instrument for measuring HRQOL [15]. The questionnaire consists of five questions regarding mobility, self-care, usual activity, pain/discomfort, and anxiety/depression [11]. Every question has five possible answer options, from "no problems at all" to "severe problems." These questions are combined with the EQ-VAS. This is basically a printed scale from 0 to 100, on which patients mark their perceived health state. The number marked is filled in a box afterward. The EQ-5D-5L allows the quality of life to be expressed in utilities. Nevertheless, although the EQ-VAS provides an individual score between the worst and the best imaginable health for the patient, the EQ-5D-5L provides a five-digit code on the basis of the response pattern. This was composed with the Spanish EQ-5D-5L value set to identify the utility of the answers [16]. The EuroQol Group provides a specific value set for Spanish-speaking countries, which was used for this study [17]. Because the value set is not yet available for the new EQ-5D-5L instrument, an interim scoring algorithm was derived from the three-level EQ-5D value set, which should be acknowledged as a temporary solution [18].

Data Reporting

Descriptive statistics (mean and SD) were used to report health utilities. The results of the questionnaire were reported in tables according to the EuroQol guidelines [16]. Subgroup analyses were performed according to age range, sex, and the Centers for Disease Control and Prevention (CDC) classification along with the corresponding utility. The CDC classification system assesses the severity of HIV disease by CD4 cell counts [19]. The mean age was used to dichotomize the sample into young and older groups. The Mann-Whitney *U*-test and the Kruskal-Wallis test were performed to assess statistical differences between subgroups. The data were conditioned and analyzed with Microsoft Office Excel 2007 and IBM SPSS 22.

Results

Patients' Characteristics

A total of 181 questionnaires were distributed to patients with HIV/AIDS. Of these, 14 were excluded because of lack of crucial information, such as the person's identification number, and 29 questionnaires were not fully completed. The final sample comprised 138 patients, including 31 female and 107 male participants. The mean age of the patients was 46.38 ± 11.44 years. Most of the patients (65.9%) were classified as being at stage 3 (CDC classification) of the disease, whereas stages 1 and 2 were almost equally represented, with 20 and 24 patients, respectively. The stage of three patients was unknown, also in 2 not applicable cases.

Quality of Life of Patients with HIV/AIDS

Using the EQ-5D-5L, the mean utility of the sample was estimated at 0.85 ± 0.21. The mean EQ-VAS score was 84.38 ± 14.27. Table 1 presents a more detailed description of the age distribution with central tendencies. The dimensions anxiety/depression and pain/discomfort had poorer outcomes than the mobility, self-care, and usual activity dimensions. Table 2 presents the results of the particular dimensions of the questionnaire separated into seven age groups. Rates generally decreased with increasing age, except for the pain/discomfort and anxiety/depression dimensions. A total of 57 patients (41%) reported full health state (11111 profile).

The subgroup analyses of age showed a higher utility value between the younger group (0.89 ± 0.18) and the older group (0.82 ± 0.24) for the utility measured with the EQ-5D-5L ($P = 0.112$). The EQ-VAS values followed the same pattern (85 ± 13 vs. 86 ± 17; $P = 0.363$) but neither had any significance.

On average, men reported a higher score (0.87 ± 0.19) than did women (0.76 ± 0.26). A statistically significant difference ($P = 0.002$) was found with the EQ-5D-5L, but not with the EQ-VAS ($P = 0.842$).

Table 1 – EQ-VAS and EQ-5D-5L values of patients with HIV/AIDS in Bogotá, Colombia, according to age.

	Age group (y)							
	<20	20–29	30–39	40–49	50–59	60–69	70+	Total
				EQ-VAS				
Mean ± SD	88.33 ± 16.07	93.89 ± 8.58	81.85 ± 21.24	85.20 ± 14.39	87.14 ± 10.68	85.94 ± 16.35	68.33 ± 12.58	84.38 ± 14.27
Median	95.00	100.00	90.00	90.00	90.00	95.00	70.00	90.00
25th percentile	82.50	90.00	77.50	80.00	80.00	70.00	62.50	77.50
75th percentile	97.50	100.00	95.50	95.00	95.00	100.00	75.00	94.00
				EQ-5D-5L				
Mean ± SD	0.93 ± 0.03	0.90 ± 0.15	0.86 ± 0.14	0.84 ± 0.12	0.86 ± 0.14	0.92 ± 0.09	0.78 ± 0.33	0.85 ± 0.22
Median	0.95	0.95	0.90	0.85	0.90	0.92	0.95	0.91
25th percentile	0.92	0.90	0.80	0.77	0.77	0.89	0.67	0.82
75th percentile	0.95	1.00	1.00	0.95	1.00	1.00	0.97	1.00

EQ-5D-5L, five-level version of the EuroQol five-dimensional questionnaire; EQ-VAS, EuroQol visual analogue scale.

The Kruskal-Wallis test showed significance between health utilities from the EQ-5D-5L and the CDC classification of disease ($P = 0.024$). Stage 2 (CD4 200–499) had the highest value of 0.95 ± 0.08, followed by stage 1 (CD4 $\geq$ 500) with 0.87 ± 0.25 and stage 3 (CD4 $<$ 200) with 0.83 ± 0.22.

Discussion

In this study, we estimated the health utilities of patients with HIV/AIDS in Bogotá, Colombia. The mean utility of the EQ-5D-5L was 0.85 ± 0.21, and the EQ-VAS score was estimated at 84 ± 14. A lower utility was found for women and women at CDC stage 3. According to the five EuroQol dimensions, the pain/discomfort and anxiety/depression dimensions were associated with the poorer outcomes.

Our population included only patients receiving antiretroviral therapy and, as noted by Valencia et al. [9], higher HRQOL scores were obtained for these patients (0.66 with therapy vs. 0.46 without therapy). A lower HRQOL score for women than for men was also reported by Valencia et al. [9] for one dimension in the quality-of-life scale, suggesting that women could have more concerns generated by their health condition. In another study, no differences in quality of life between women and men undergoing HIV treatment were observed when adjusting from different clinical variables [20]. Because we did not control for clinical differences between sex, our finding should be interpreted with caution.

The implications of this study are twofold. First, these data could be very helpful in making economic evaluations. Given the increasing burden of HIV/AIDS in Colombia, it would be interesting to assess the economic value of prevention programs. The results of our study provide relevant inputs for conducting such economic analysis. Second, our study could also be helpful in patient management. We reported poorer outcomes for anxiety/depression and for pain/discomfort, which would suggest the need for psychological support, especially for women. Similar pattern with EQ-5D instruments is, however, also reported for the general population. The other items were scored surprisingly high, indicating the positive effect of the antiretroviral therapy treatment on the clinical outcomes.

There are some potential limitations to our study. First, the study was conducted in a single specialized clinic for patients receiving antiretroviral therapy. This care is not standard all over the country or even the city. The generalizability of the findings could therefore be limited. A larger study using information from different clinics and different populations would be needed. Second, linguistic validation of the questionnaire in this new patient population was not performed and should be recognized as a limitation. Further work on the responsiveness and usefulness of the EQ-5D-5L in comparison with the three-level EQ-5D would also be needed [21]. At present, one additional practical disadvantage related to the use of this new questionnaire is the need to collect new tariff values for all countries. Several studies to derive EQ-5D-5L value sets are however ongoing at present. Third, although the EQ-5D questionnaire is one of the most widely used generic tools, the scientific group behind it never defined a specific protocol for the use of the previous version. This has led to inconsistent use of the results regarding eliciting, analyzing, or modeling the data; moreover, it is often difficult for the participants to distinguish between the particular answer options such as "severe" or "extreme" pain [21]. Finally, a potential limitation is the self-administrated nature of the questionnaire in terms of misunderstandings and information loss due to incomplete sheets.

Table 2 – Percentage of patients with HIV/AIDS from Bogotá, Colombia, reporting levels 1 to 5 by EQ-5D-5L dimension and by age group.

		Age group (y)							
EQ-5D-5L dimension	Level	<20	20–29	30–39	40–49	50–59	60–69	70+	Total
Mobility	1	100	89	90	76	81	81	67	81.16
	2	0	11	5	10	6	13	0	7.97
	3	0	0	5	8	8	6	0	6.52
	4	0	0	0	4	11	0	33	5.07
	5	0	0	0	2	0	0	0	0.72
Self-care	1	100	100	100	86	92	94	67	91.30
	2	0	0	0	8	6	0	33	5.07
	3	0	0	0	0	8	6	0	2.90
	4	0	0	0	2	11	0	0	3.62
	5	0	0	0	4	0	0	0	1.45
Usual activity	1	100	78	95	80	83	88	67	84.06
	2	0	22	5	10	8	13	0	9.42
	3	0	0	0	8	8	0	33	5.80
	4	0	0	0	0	0	0	0	0.00
	5	0	0	0	2	0	0	0	0.72
Pain/discomfort	1	67	78	65	61	53	81	0	61.59
	2	0	22	30	27	31	13	67	26.81
	3	0	0	5	6	8	6	0	5.80
	4	0	0	0	2	8	0	33	3.62
	5	33	0	0	10	0	0	0	4.35
Anxiety/depression	1	33	67	70	57	53	69	67	59.42
	2	67	22	25	24	31	13	0	24.64
	3	0	0	0	14	11	19	33	10.87
	4	0	11	0	8	6	0	0	5.07
	5	0	0	5	4	0	0	0	2.17

EQ-5D-5L, five-level version of the EuroQol five-dimensional questionnaire.

Conclusions

The health utilities of patients with HIV/AIDS receiving antiretroviral therapy in Bogotá, Colombia, were relatively high using the EuroQol questionnaire. These data, in combination with cost data, could be very useful for future economic evaluations.

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R E F E R E N C E S

[1] Douek DC, Roederer M, Koup RA. Emerging concepts in the immunopathogenesis of AIDS. Annu Rev Med 2009;60:471–84.

[2] The Joint United Nations Programme on HIV/AIDS (UNAIDS). Global Report: UNAIDS Report on the Global AIDS Epidemic 2013. Geneva, Switzerland: UNAIDS, 2013.

[3] World Health Organization. Data on the size of the HIV/AIDS epidemic: number of people (all ages) living with HIV by country. 2012. Available from: http://apps.who.int/gho/data/view.main.22100. [Accessed September 1, 2014].

[4] Ortblad KF, Lozano R, Murray CJ. The burden of HIV: insights from the Global Burden of Disease Study 2010. AIDS 2013;27:2003–17.

[5] Vargas-Zea N, Castro H, Rodríguez-Páez F, et al. Colombian health system on its way to improve allocation efficiency—transition from a health sector reform to the settlement of an HTA agency. Value Health Reg Issues 2012;1:218–22.

[6] Clayson D, Wild DJ, Quarterman P, et al. A comparative review of health-related quality-of-life measures for use in HIV/AIDS clinical trials. Pharmacoeconomics 2006;24:751–65.

[7] Schackman BR, Goldie SJ, Freedberg KA, et al. Comparison of health state utilities using community and patient preference weights derived from a survey of patients with HIV/AIDS. Med Decis Making 2002;22:27–38.

[8] Cardona-Arias J, Peláez-Vanegas L, López-Saldarriaga J, et al. Health related quality of life in adults with HIV/AIDS in Colombia. Biomedica 2011;31:532–44.

[9] Valencia CP, Canaval GE, Marín D, Portillo CJ. Quality of life in persons living with HIV–AIDS in three healthcare institutions of Cali, Colombia. Colomb Méd 2010;41:206–14.

[10] Wu AW, Hanson KA, Harding G, et al. Responsiveness of the MOS-HIV and EQ-5D in HIV-infected adults receiving antiretroviral therapies. Health Qual Life Outcomes 2013;11:42.

[11] Herdman M, Gudex C, Lloyd A, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). Qual Life Res 2011;20:1727–36.

[12] Janssen MF, Pickard AS, Golicki D, et al. Measurement properties of the EQ-5D-5L compared to the EQ-5D-3L across eight patient groups: a multi-country study. Qual Life Res 2013;22:1717–27.

[13] Tran B, Ohinmaa A, Nguyen L. Quality of life profile and psychometric properties of the EQ-5D-5L in HIV/AIDS patients. Health Qual Life Outcomes 2012;10:132.

[14] Janssen MF, Birnie E, Haagsma JA, Bonsel GJ. Comparing the standard EQ-5D three-level system with a five-level version. Value Health 2008;11:275–84.

[15] EuroQol. EQ-5D-5L webpage. 2014. Available from: http://www.euroqol.org/eq-5d-products/eq-5d-5l.html. [Accessed May 1, 2016].

[16] EuroQol. EQ-5D-5L user guide. 2013. Available from: http://www.euroqol.org/fileadmin/user_upload/Documenten/PDF/Folders_Flyers/UserGuide_EQ-5D-5L_v2.0_October_2013.pdf. [Accessed May 1, 2016].

[17] EuroQol. EQ-5D-5L value sets. 2014. Available from: http://www.euroqol.org/about-eq-5d/valuation-of-eq-5d/eq-5d-5l-value-sets.html. [Accessed May 1, 2016].

[18] van Hout B, Janssen MF, Feng YS, et al. Interim scoring for the EQ-5D-5L: mapping the EQ-5D-5L to EQ-5D-3L value sets. Value Health 2012;15:708–15.
[19] Centers for Disease Control and Prevention. Terms, Definitions, and Calculations Used in CDC HIV Surveillance Publications. Atlanta, GA: Centers for Disease Control and Prevention, 2013.
[20] Perez IR, Olry de Labry Lima A, del Castillo LS, et al. No differences in quality of life between men and women undergoing HIV antiretroviral treatment: impact of demographic, clinical and psychosocial factors. AIDS Care 2009;21:943–52.
[21] Devlin NJ, Krabbe PF. The development of new research methods for the valuation of EQ-5D-5L. Eur J Health Econ 2013;14(Suppl. 1):S1–3.