HIV patients' appraisal of antiretroviral treatment characteristics in Spain

María José Fuster-Ruiz de Apodaca[1,2*], Piedad Arazo Garces[1,3], Juan Carlos Lopez Bernaldo de Quirós[1,4], Nuria Sánchez Vega[5], Manuel Cotarelo Suarez[5] and David Dalmau Juanola[1,6]

[1] Sociedad Española Interdisciplinaria del SIDA (SEISIDA), Madrid, Spain. E-mail:gerencia@sesida.net
[2] Departamento de Psicología Social y de las Organizaciones, Universidad Nacional de Educación a Distancia, UNED, Madrid, Spain. E-mail: abibi65@gmail.com
[3] Hospital Miguel Servet, Zaragoza, Spain. E-mail: juanclopezbq@gmail.com
[4] Hospital Gregorio Marañón, Madrid, Spain. E-mail: nuria.sanchez.vega@merck.com
[5] Merck Sharp and Dohme, Madrid, Spain. E-mail: manuel.cotarelo@merck.com
[6] Hospital Universitari Mutua Terrassa, Barcelona, Spain. E-mail: ddalmau@mutuaterrassa.cat

*Address correspondence to: María José Fuster de Apodaca, Ph.D.,
Dr. Fleming, 3, 2, 28036 Madrid, Spain. Tel.: +34 662677958
E-mail: gerencia@sesida.net

ABSTRACT

Introduction

The main goal was to determine HIV patients' ratings of the characteristics of combined antiretroviral treatment (cART). We also analysed their satisfaction with the treatment, their trust in the physician, level of information, perceived support, and quality of life. Lastly, we determined whether these variables differed as a function of the typology of the participating patients.

Methods

A self-referred questionnaire was administered to 602 HIV patients attending external consultations in seven HIV clinics in Spain. The questionnaire included measures of patients' ratings of the cART characteristics, health-related quality of life, engagement with the health care provider, perception of support, and socio-health information.

Results

The most valued characteristic of cART was its efficacy, followed by the absence of long-term adverse side effects. Very high scores were also obtained by clinical evidence, single daily dosage, and the absence of short-term adverse side effects and interactions. Satisfaction with cART was high, and the main source of information was the treating physician. Cluster analysis yielded two typologies of patients. Patients who had

been infected for a shorter time and who had fewer comorbidities expressed higher satisfaction and better quality of life.

Conclusions

In addition to cART efficacy, other cART characteristics valued highly by the patients are clinical evidence and available information. The patients give priority to the absence of long-term adverse side effects over the absence of short-term effects. Satisfaction with cART and quality of life vary as a function of the demographic and clinical profile of the patients.

Keywords: cART characteristics; preferences; satisfaction; quality of life.

Valoración de las características del tratamiento antirretroviral por los pacientes con VIH en España

RESUMEN

Introducción

El objetivo principal fue conocer la valoración que los pacientes con VIH hacían de las características del tratamiento antirretroviral (TAR). Asimismo, se analizó su satisfacción con él, la confianza en el médico, la información, el apoyo percibido y la calidad de vida. Finalmente, se analizó si estas variables diferían en función de la tipología de pacientes participantes.

Métodos

Se administró un cuestionario, de carácter auto-referido, a 602 pacientes con VIH. La recogida de datos se realizó en las consultas externas de siete hospitales dedicadas al seguimiento de estos pacientes. El cuestionario incluyó medidas sobre la valoración de características del TAR, calidad de vida relacionada con la salud, relación con el médico, percepción de apoyo e información socio-sanitaria.

Resultados

Las característica más valorada del TAR fue su eficacia, seguida de la ausencia de efectos adversos a largo plazo. Puntuaciones muy altas obtuvieron también la evidencia clínica, la dosis única diaria, la ausencia de efectos adversos a corto plazo y de interacciones. La satisfacción con TAR era alta. El análisis cluster mostró dos tipologías de pacientes. Aquellos con menos tiempo de infección y menos comorbilidades, expresaron una mayor satisfacción y una mejor calidad de vida.

Conclusiones

Además de la eficacia, la evidencia clínica y la información disponible son características del TAR muy valoradas. Los pacientes priorizan la ausencia de efectos adversos a largo plazo sobre los efectos a corto plazo. La satisfacción con el TAR y la calidad de vida varían en función del perfil demográfico y clínico de los pacientes.
Palabras clave: características del TAR; preferencias; satisfacción; calidad de vida.

Introduction

Combined antiretroviral treatment (cART) has managed to achieve a substantial improvement in the reduction of morbimortality[1] and, therefore, in the quality of life of people with HIV. However, patients' engagement and health behaviours are very important for an effective control of the infection. The patients' attributions and beliefs, regarding their disease, the capacity of the treatment to control it, and its consequences, determine their health-related behaviour and how they cope with the disease.[2,3]. These beliefs may affect their adherence to cART. Available evidence shows the importance that social support, information and comprehension of the treatment, and expectations of positive outcomes in the control of the infection or perceived health status and quality of life, have on adherence.[4-6] The relationship with the physician is an important factor, both for adherence and for selecting the adequate treatment.[7] There are also treatment-related factors, such as patient satisfaction[6] or the characteristics of current treatments.[8] Regarding treatments, several studies have shown that the intensity of the adverse events, and the quantity of pills and dosage frequency, had an important impact on adherence.[4,9,10]

In addition to adherence, it has been shown that patients' preference for the characteristics of the treatment is related to their satisfaction with the treatment and quality of life.[11] Hence, some studies have explored such preferences, finding diverse results such as a preference for once-daily dosing[8] or, in contrast, granting more value to effectiveness than to convenience.[12] In Spain, Ventura et al.[6] found that efficacy, durability, and tolerance were considered the most important conditions, more important than convenience of administration. To our knowledge, there are no later studies in Spain showing whether these preferences have changed with the shifting paradigm that is taking place with cART. In former years, although the simplification of the treatment was a reality and

there were some fixed-dose combinations, they were based on three nucleoside analogues and had to be taken twice a day. In recent years, fixed-dose combinations and once-daily doses have increased. All of this may have an impact on patients' preferences. Moreover, thanks to effective cART, life expectancy has increased significantly and, with an ageing population, some comorbidities have emerged that may affect patients' preferences, which can guide doctors in the individualisation of therapy.

Therefore, the main purpose of this investigation was to describe the appraisal that patients with HIV in Spain have made of different cART characteristics and their degree of satisfaction with the treatment. We also wanted to determine some variables that might be related to a better management of the patients' health such as information about HIV, the sources that patients use, their perceived socio-sanitary support, and their quality of life. Lastly, as not all the patients in Spain have the same profile, this study analysed the typology of the participants to determine whether the variables of interest differed as a function of patient's profiles.

Methods

Design and procedure

An observational cross-sectional survey was conducted. 602 people with HIV participated in the investigation. Selection of participants was done through casual or incidental no probabilistic sampling. The study was carried out in the external consultations of seven tertiary-level hospitals especially dedicated to attending HIV patients in Spain (Gregorio Marañón Hospital, Madrid; Miguel Servet Hospital, Zaragoza; Mutua Terrassa Hospital, Barcelona; Xeral Hospital, Vigo; Reina Sofía Hospital, Córdoba; Virgen del Rocío Hospital, Sevilla; University Hospital, La Coruña).

We obtained the approval to carry out this investigation (SEISIDA I-2013) from the ethics committee of

Hospital Universitari Mútua de Terrassa (act 05/13) . Data collection was carried out between May and September of 2013.

A questionnaire was distributed among seven hospital units dedicated to the care of people with HIV in diverse autonomous communities in Spain. The health care professional in charge explained the goals of the study to the participants, obtained their informed consent, and requested them to complete the questionnaire. The participants completed the questionnaire in the waiting rooms of the different centres, subsequently returning the information to these professionals. All procedures of this study followed the 1964 Helsinki declaration (revised in 1996), as well as the guidelines for good clinical practice.

Measures

Demographic and clinical variables. We designed a self-referred questionnaire. At the demographic and clinical level, the questionnaire included the following variables: gender, age, ethnic group, civil status, sexual orientation, educational level, work situation, socio-economic level, route of transmission of HIV, year of diagnosis, time in cART, and presence of comorbidities.

Information and socio-sanitary support. The questionnaire included a series of questions aimed at determining the patients' degree of information, their most frequently used sources of information, and the availability of support programmes. The degree of information was measured by means of an item with a four-point Likert-type response format, where higher scores corresponded to a higher perceived level of information. To determine the most frequently used sources of information, a list with 11 frequent sources was provided, where participants were requested to indicate the three that they used the most, in order of importance. The availability of information programmes and treatment support was reported by means of a dichotomic item. Lastly, to measure the relationship between the participants and their physicians, we used the Engagement with Health Care Provider[13] scale, made up of 12 items with a four-point Likert response format, where higher scores indicated greater commitment to the relationship with the doctor. The reliability of the scale was good (α = .93). We also asked them to rate their relationship with their physician on one item with a five-point response range, where a higher score indicated a greater degree of satisfaction.

Characteristics of cART. We designed a scale with different cART attributes related to dosage, characteristics, diet requirements, tolerance, toxicity, interactions, efficacy, and available evidence and information. The design of this scale was based on prior studies related to the object of this investigation, [6,8,10] and through consensus of a team of experts in clinical and therapeutic aspects of HIV infection. The scale has 22 items and is rated on a 10-point scale, where higher scores indicate a greater value conveyed to that attribute. Table 2 shows the contents of the items.

Health-related quality of life. We used three dimensions of the Spanish version[14] of the MOS-HIV questionnaire.[15] These were: the dimension of the perception of general health, quality of life, and transitory health. These items had a five-point Likert-type response format. For each dimension, a scale score between 0 and 100 was obtained.

Data analysis

To analyse the patients' rating of the cART characteristics, and taking into account that the scale was elaborated ad-hoc, we first analys edits psychometric properties. Then, to investigate its dimensionality, we conducted exploratory factor analysis (EFA). We used the least generalised squares extraction method and Varimax solution with Kaiser to clarify the composition of the factors.

To analyse the diverse typologies of people with HIV, we performed cluster analysis in two stages. The number of clusters was determined through Schwarz's Ba-

yesian criteria. Once the groups were established, we assessed possible differences in the variables of interest as a function of the participants' profile by means of a Student's t-test for independent samples. This test is robust when the normality assumption is violated.[16]

Results

The majority of the participants were male, mean age 45 years, Caucasian race, heterosexual orientation, and with a primary or secondary level of education.

More than one half of the participants did not work, either because they were unemployed or were declared occupationally disabled, and the socio-economic level of more than two thirds of them was between medium-low and low. The most frequent route of transmission of HIV was unprotected sexual relations, and the mean time of infection was 14 years. More than 94% had received cART for an average of 12 years (see Table 1).

Rating of the characteristics of cART

TABLE 1. SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF THE PARTICIPANTS.

	N (%)
Gender	
Men	439 (73.2)
Women	159 (26.5)
Transgender	2 (0.3)
Race	
Caucasian/European	418 (72.4)
Hispanic/Latin	144 (25)
Asian/Oriental	2 (0.3)
Black	11 (1.9)
Other/unknown	2 (0.3)
Age, mean (SD)	45.48 (9.12)
Educational level	
No studies	31 (5.2)
Primary	242 (40.4)
Secondary	191 (31.9)
Higher studies	124 (20.7)
Other	11 (1.9)
Civil status	
Married/living w partner	243 (40.6)
Divorced or separated	62 (10.4)
Single	246 (41.1)
Widowed	48 (8)
Sexual orientation	
Heterosexual	328 (56.2)
Homosexual	203 (34.8)
Bisexual	33 (5.7)
I prefer not to answer	38 (6.3)

	N (%)
Work situation	
Working	263 (45.1)
Unemployed	180 (31.1)
Occupational disability	136 (23.5)
Socio-economic level	
Low	161 (27.2)
Medium-low	303 (51.3)
Medium-high	123 (20.8)
High	4 (0.7)
Transmission pathway	
Unprotected sexual relations	346 (59.6)
Sharing needles, etc.	119 (20.5)
Transfusion	4 (0.7)
Various practices concur	98 (16.9)
Other	14 (2.4)
Taking ARV treatment	561 (94.4)
Presence of comorbidities	369 (37.7)
Hepatitis C	168 (27.9)
Psychopathology	108 (17.9)
Dyslipidaemia	97 (16.1)
Osteoporosis	49 (8.1)
Hypertension	46 (7.6)
Kidney problems	32 (5.3)
Diabetes	19 (3.2)
Other	117 (19.4)
Duration of infection, median (IA)	14 (30)
Time in treatment, median (IA)	12 (27)

N = 602. *Note:* Data provided in percentages, except where specified. The percentages are based on totals and include missing data. Abbreviations: IA: interquartile amplitude.

We asked the participants which were the characteristics they valued the most and which ones they thought could be more important for a correct adherence to cART. As shown in Table 2, the characteristic considered the most important was treatment efficacy, followed by the absence of long-term adverse side effects. Scores higher than eight were also obtained in the items concerning information about the treatment, available clinical evidence about the drug, on-ce-daily dosing, absence of short-term adverse side effects, and absence of interactions.

Next, in order to analyse the factor structure of the questionnaire and reduce its dimensionality, we performed an EFA. The results of the Kaiser-Meyer-Olkin sample adequacy test (*KMO* = .73) and Bartlett's sphericity test (χ^2 = 3045.44, *p* < .001) showed a good fit. The analysis extracted seven factors, which explained 53.37% of the variance (Table 2). The factors were the following: characteristics related to non-sim-

plification of treatment (F1), quantity of pills (F2), absence of toxicity and interactions (F3), evidence and treatment efficacy (F4), characteristics related to simplification of treatment (F5), frequency of picking up medication at the hospital (F6), and existence of non-scientific information (F7). The reliability of the factors was good or acceptable (Table 2), and of the total scale, good (α = .81). Figure 1 shows the mean

TABLE 2. RESULTS OF EXPLORATORY FACTOR ANALYSIS OF THE SCALE OF CHARACTERISTICS OF ARV.

Item	M ± SD	Loadings						
		F1	F2	F3	F4	F5	F6	F7
Taking the pills three times a day	3.95 ± 3.87	.90						
Taking the pills twice a day	4.39 ± 3.56	.82						
The large size of the pills	4.28 ± 3.78	.56						
Taking pills without food	4.64 ± 3.65	.45						
Total number of pills per day	7.83 ± 2.99		.94					
Number of pills each time	7.58 ± 3.14		.84					
Absence of long-term adverse side effects	8.70 ± 2.75			.92				
Absence of short-term adverse side effects	8.18 ± 3.09			.72				
Absence of interactions	8.13 ± 2.89			.58				
Available information about treatment	8.64 ± 2.36				.67			
Duration of use and clinical evidence	8.39 ± 2.6				.62			
Treatment efficacy	9.55 ± 1.48				.37			
Adherence to medication schedule1	8.02 ± 2.96				.29			
Small size of the pills	6.4 ± 3.64					.57		
Taking the pills once a day	8.41 ± 2.79					.45		
Absence of dietary constraints	7.16 ± 3.44					.41		
Taking the pills with food	5.6 ± 3.72					.31		
Picking up the medication once a month	6.49 ± 3.67						.97	
Picking up the medication every two months	7.2 ± 3.42						.45	
Recommendation by acquaintance or NGO	6.53 ± 3.52							.73
Available information on Internet or other information media	8.64 ± 2.36							.55
Cronbach's α		.78	.91	.79	.63	.52	.61	.63
LGS extraction and Varimax solution with Kaiser	SS	2.2	1.9	1.9	1.4	1.3	1.2	1.2
	% EV	10.4	9.2	9.2	6.7	6	6	5.6
	% Ap	10.4	19.7	28.9	35.6	41.7	47.7	53.3

Note: LGS= least generalised squares , SS = sum of squares, EV = Explained variance, Ap = Accumulated percentage. The scale has a range of 10 points. 1 Item eliminated low loading and homogeneity with factor.

obtained in the factor scores. As can be observed, the most highly valued dimension was evidence and treatment efficacy, followed by absence of toxicity and interactions.

Variables related to the management of the health process

The level of satisfaction expressed by the participants was very high ($M = 8.67$, $SD = 1.81$). With regard to their level of information about HIV, a large majority said they were very well (57.3 %) or fairly well informed (27.1%). The source of information most frequently used was their physician (82.1%), followed by other health care professionals (33.9%), and thirdly, general information media (23.2%). Furthermore, 63% of the participants stated that they had access to programmes of information and treatment support.

With regard to sanitary support, the results of the scale of commitment to their physician showed a very high mean ($M = 3.74$, $SD = .44$). Moreover, most of the patients had a very good (71.3%) or good (25.7%)relationship with their physician.

Lastly, regarding their quality of life, the dimensions of transitory health ($M = 60.85$, $SD = 21.96$) and quality of life ($M = 63.08$, $SD = 21.46$) were found to exceed the theoretical mean of scale, whereas the dimension of perceived general health was near the mean ($M = 52.18$, $SD = 28.65$).

Typologies of patients and HIV and their relationship with health variables

The two-stage cluster analysis classified the participants into two groups. All the demographic and health variables taken into account contributed significantly ($p < .01$) to the formation of the groups (Table 3).

The first cluster was made up of 41.5% of the participants. The majority of them were male, a bit over 40 years of age, homosexuals, mostly single, with secondary and higher educational levels, a socio-economic level between medium-low and medium-high, and most of them were working. In this group, the predominant route of transmission of HIV was through unprotected sex, there were fewer people with co-

FIGURE 1. MEAN SCORES OF THE FACTORS OF THE SCALE OF CHARACTERISTICS OF ARV TREATMENT
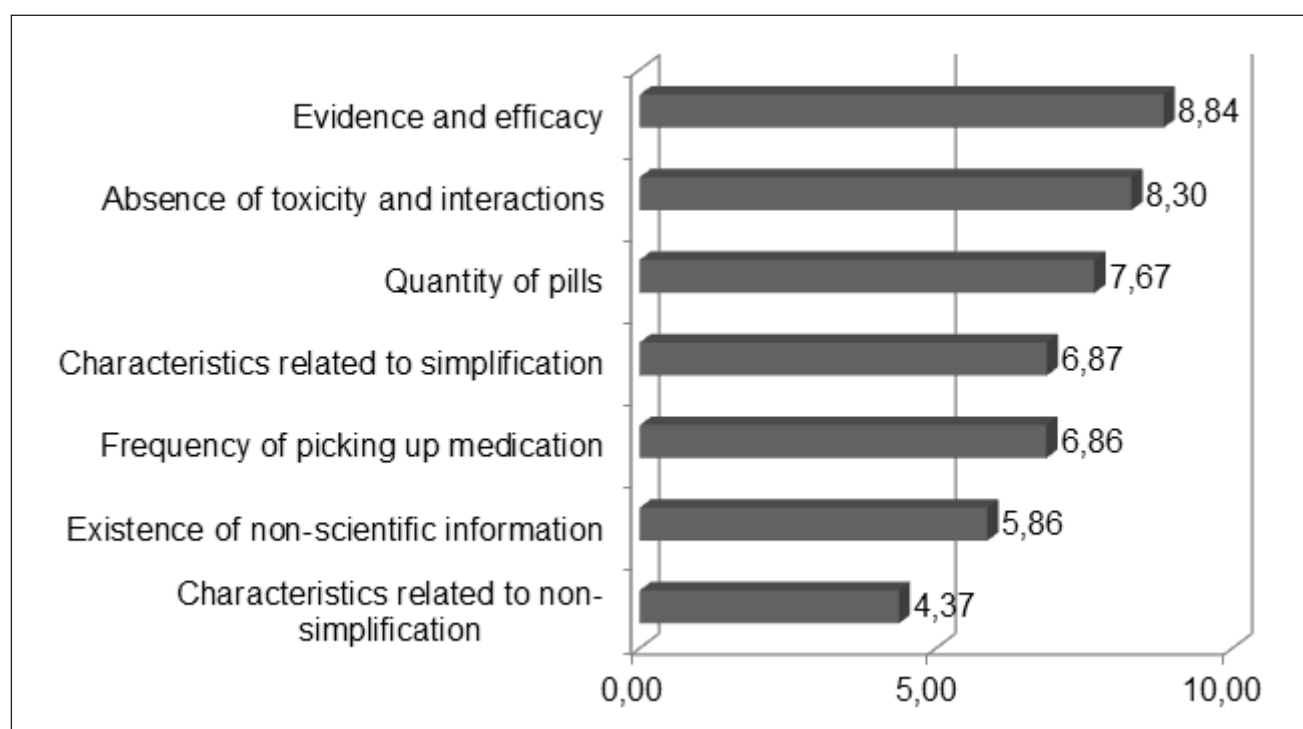
morbidities than in the other group, and they had been infected with HIV for less than ten years.

The second cluster was made up of 58.5% of the participants. Although they were also predominantly males, the percentage of females was higher than in the first cluster. They were older than the members of the first cluster, basically heterosexual, there were fewer single people, they had a lower educational level and a lower socio-economic level, a higher percentage were unemployed, and a larger proportion referred to some type of occupational disability. The HIV transmission routes—unprotected sex and sharing needles—were similar, they had been infected for more years than the first cluster had, and most of them presented some comorbidity.

After classifying the participants, we analysed possible differences in the variables of interest as a function that the typologies found. The results showed that the people of the first cluster were more satisfied with the treatment than were those of the second cluster. Likewise, the first cluster had higher scores in perception of health and quality of life. However, the people of the second cluster displayed a higher level of information about HIV. With regard to the relationship of commitment to the doctor, no group differences were observed (Table 4).

Regarding the characteristics of cART, no significant group differences were found in the different factors. Nevertheless, in view of the relevance of this issue for patients with comorbidities, we analysed whether their ratings of the characteristics differed as a result of whether or not they presented comorbidities. The results showed that the people with comorbidities ascribed more importance to the characteristic related to the absence of toxicity and interactions ($M = 8.51$, $SD = 2.32$ and $M = 7.93$, $SD= 2.84$, for people with and without comorbidities, respectively), t (562) =2.62, $p = .01$, $d = 0.21$, to the quantity of pills ($M = 7.89$, $SD = 2.89$ and $M = 7.36$, $SD= 3.05$, respectively), t (566) =2.05, $p = .04$, $d = 0.17$; and to the

simplification of the treatment ($M = 7.13$, $SD = 2.15$ and $M = 6.44$, $SD= 2.48$, respectively), t(572) =3.53, $p = .00$, $d = 0.29$.

Discussion

The results of this investigation have yielded relevant knowledge about the current rating of patients with HIV concerning treatment characteristics. Some important variables related to the management of the health process were also described. Lastly, some of the differences as a function of the different profiles of people with HIV in Spain have been analysed in greater depth.

With regard to the characteristics of cART, its efficacy and the existing evidence about the treatment emerged as the characteristics that were valued the most by patients. They were followed by the absence of toxicity and interactions. Concerning this topic, long-term toxicity was valued higher than tolerance. The smaller quantity of pills required by the treatment was rated lower than these characteristics. Other authors have noted the progressive importance that patients with HIV have granted to treatment efficacy versus convenience or tolerance.x[6,11] However, a novelty of our results is the positive rating not only of efficacy, but also of the clinical evidence and available information about the treatment. These results are very relevant from a health perspective, because a person's expectations of positive outcomes regarding a certain health behaviour—in this case, taking the treatment—is an important determinant of that behaviour.[17,18] The level of involvement and the degree of knowledge possessed are also determinants.[5,19] In addition, it is important to underline patients' preference for the absence of toxicity with long-term use of the medication versus its short-term adverse events. This result makes sense in a scenario like the current one, where tolerance of the medications has improved a lot,[19] as has survival.[1] These circumstances

TABLE 3. CLASSIFICATION OF TWO-STAGE CLUSTER ANALYSIS.

Variable	C1 (n = 198)	C2 (n= 279)	Contrast statistic = C1/C2*
Sexual orientation			χ^2 = 203.9/74.8
Heterosexual	7.6	89.6	
Homosexual	83.8	2.9	
Bisexual	5.6	4.7	
I prefer not to answer	3	2.9	
Transmission pathway			χ^2 = 74.9/53.1
Unprotected sexual relations	88.4	39.4	
Sharing needles, etc	0	35.1	
Transfusion	0.51	1.1	
Various practices concur	10.6	21.5	
Other	0.5	2.9	
Gender			χ^2 = 64.6/45.9
Men	99	56.6	
Women	0.5	43	
Transgender	0.5	0.4	
Educational level			χ^2 = 67.2/47.7
No studies	1.5	6.4	
Primary	12.7	54.1	
Secondary	42.9	27.2	
Higher studies	40	10.8	
Other	3	1	
Work situation			χ^2 = 47.1/33.5
Working	69.2	31.2	
Unemployed	22.2	35.5	
Occupational disability	8.6	33.3	
Socio-economic level			χ^2 = 41.4/29.4
Low	9.1	35.8	
Medium-low	54.5	53.8	
Medium-high	35.9	10.4	
High	0.5	0.4	
Presence of comorbidities	45	74.5	χ^2 = 25.2/17.9
Civil status			χ^2 = 29.4/20.8
Married/living w partner	38.9	42.7	
Divorced or separated	4.5	13.6	
Single	56.6	31.9	
Widowed	0	11.8	
Duration of infection, mean (SD)	9.45 (± 7.19)	17.86 (± 7.81)	t = -9.6/7.4
Age, mean (SD)	42.24 (± 9.05)	47.18 (± 8.15)	t = -4.5/4.2

Note: Data provided in percentages, except where specified.

* Measure of the importance of the categorical (χ^2 = Pearson's Chi Square) and continuous variables (Student's t) within each cluster ($p < .01$)

TABLE 4. DIFFERENCE OF MEANS IN SATISFACTION WITH TREATMENT, LEVEL OF INFORMATION, RELATIONSHIP WITH DOCTOR, AND QUALITY OF LIFE IN THE TWO TYPOLOGIES OF PATIENTS WITH HIV

	M ± SD		t(df)	95% IC	Cohen's d	p
	C1	C2				
Satisfaction ARV[1]	8.85 ± 1.46	8.44 ± 2.03	2.37 (451)	[0.71, 0.75]	0.22	.018
Information HIV[2]	1.75 ± .54	1.92 ± .63	-2.94 (451)	[-0.27, -0.05]	-0.28	.003
Relationship with doctor	3.72 ± .46	3.75 ± .40	-0.83 (468)	[-0.11, -0.04]	-0.07	.40
Transitory health	60.4 ± 19.87	58.81 ± 22.54	-0.79 (470)	[-2.35, 5.52]	0.07	.42
Self-rated perception of general health[3]	60.62 ± 25.19	48.64 ± 27.97	4.77 (468)	[7.04, 16.91]	0.44	.000
Quality of life[3]	66.91 ± 20.56	59.14 ± 21.21	3.98 (472)	[3.93, -11.60]	0.37	.000

C1 = First cluster. C2 = Second cluster. [1] The scale has a range of 10 points. [2] The scale has a range of 4 points. [3] Scale ranging from 0 to 100.

allow patients to consider the long-term effects, making it easier to accept initial adverse events in exchange for safer long-term therapy.

The results have also shown that the participants, in general, were highly satisfied with the treatment, and that they perceived that they had enough information and support related to their health and treatment. They also had a good relationship with their physician. The physician, followed by other health care professionals, was the main source of information for the patients. Prior studies in Spain had found that friends were more useful than the physicians as sources of information.[6] This indicates that patients with HIV in Spain have resources that allow them to cope adequately with their health process.

However, not all the patients with HIV in Spain have the same profile. In our study, two clearly differentiated typologies were found. The first one was mainly made up of male homosexuals, with higher educational and socio-economic levels, more integrated occupationally, younger, and who had been infected for a shorter time. In the second typology, there was a predominance of heterosexual people, with lower educational and socio-economic levels, older, and who had been infected for a longer time. These results are con-

sistent with the current epidemiological reality of Spain.[20] Our results have shown differences between these two profiles of patients, which could be related to their clinical and therapeutic processes. The first group not only had fewer comorbidities, but also had a better perception of their health and quality of life. Their satisfaction with the treatment was also higher. Despite this, the second group displayed a slightly higher level of information about HIV, which may be due to their longer experience with the disease, as they had been infected for more years than the first group.

Although in general, no differences were found in the patients' rating of the treatment as a function of the epidemiological typology, differences were found when exploring this aspect as a function of the presence or absence of comorbidities. The results showed that, for people with comorbidities, it was more important for the treatment to be non-toxic, and they valued the simplicity of the treatment more. This result may be explained by the fact that not only is these people's health more deteriorated, but also that their pharmacological burden is higher due to the treatment required for their comorbidities.

The results found as a function of the patients' typology are consistent with the recent study of Ven-

tura et al.[21] finding better health-related quality of life in male patients with a higher educational level, who were occupationally active, had fewer concomitant treatments and fewer adverse side effects.

This investigation presents some limitations. Among them, we note its cross-sectional nature, which precludes establishing causal relations among the target variables of the study. Another limitation is related to the fact that some variables were measured with single items, for example, satisfaction with treatment. This was done because we wished to obtain a broad, descriptive view of the target variables, and we decided to promote the viability of an extensive, broad data collection, without overburdening the health care provider teams or the patients. Nevertheless, the results obtained are coherent with other recent studies in Spain, which also found high satisfaction levels with the treatment.[21] Future studies should examine these aspects in more depth, with methodologies that increase the validity of the results.

Conclusions

As a conclusion, we note some important implications that may derive from the results of this study. First, knowledge of the patients' rating of treatment characteristics may be of great help for the design of interventions to improve adherence. According to our results, it would be useful to promote accessible information about the drugs. This information should emphasise the efficacy, safety, and clinical evidence, as this would foster expectations of outcomes and the perception of control of the health process. Likewise, the differences in the profiles of people with HIV, and their relationship with variables of health and satisfaction, could be taken into account by health care professionals, not only to select the treatment, but also to promote those aspects that may improve the ability to cope with the health process.

References

1. Rathbun RC, Lockhart SM, Stephens JR. Current HIV treatment guidelines-anoverview. Curr Pharm Des. 2006; 12:1045–63.

2. Levethal H, Brissette I, Leventhal EA. The common-sense model of self-regulation of health and illness. In: The Self-Regulation of Health and Illness Behavior. Cameron LD, Leventhal H (editors). London: Routledge, 2003: p.42–65.

3. Reinols NR, Eller LS, Nicholas PK, Corless IB,Kirksey K, Hamilton MJ, et al. HIV illness representation as a predictor of self-care management and health outcome: a multi-site, cross-cultural study. AIDS Behav. 2009; 13:258–67.

4. Catz SL, Kelly JA, Bogart LM, Benotsch EG, McAuliffe TL. Patterns, correlates, and barriers to medication adherence among persons prescribed new treatments for HIV disease. Health Psychol. 2000;19:124–33.

5. Kalichman SC, Pope H, White D, Cherry C, Amaral CM, Swetzes C, et al. Association between health literacy and HIV treatment adherence: further evidence from objectively measured medication adherence. J Int Assoc Physicians AIDS Care. 2008; 7:317–23.

6. Ventura JM, Casado MA, Escobar I, Ibarra O, Ortega L, Morales JM, et al. Preferencias, satisfacción y adherencia con el tratamiento antirretroviral: estudio ARPAS (II). Farm Hosp. 2007; 31:340–52.

7. Garvie PA, Lawford J, Flynn PM, Gaur AH, Belzer M, McSherry GD, et al. Development of a directly observed therapy adherence intervention for adolescents with human immunodeficiency virus-1: application of focus group methodology to inform design, feasibility, and acceptability. J Adolesc Health. 2009; 44:124–132.

8. Moyle G. The assessing patients' preferred treatments (APPT-1) study. Int J STD AIDS . 2003;14:34–6.

9. Al-Dakkak I, Patel S, McCann E, Gadkari A, Prajapati G, Maiese EM. The impact of specific HIV treatment-related adverse events on adherence to antiretroviral therapy: asystematic review and meta-analysis. AIDS Care. 2013; 25:400–14.

10. Stone VE, Jordan J, Tolson J, Miller R, Pilon T. Perspectives on adherence and simplicity for HIV-infected patients on antiretroviral therapy: self-report of the relative importance of multiple attributes of highly active antiretroviral therapy (HAART) regimens in predicting adherence. J Acquir Immune Defic Syndr. 2004; 36:808–16.

11. Ventura Cerdá JM, Casado Gómez MA, Morales González JM, Ortega Valín L, Ibarra Barrueta O, Escobar Rodríguez I. Características psicométricas de la escala

de satisfacción con el tratamiento antirretroviral (ES-TAR): Estudio ARPAS (l). Farm Hosp. 2007; 31:331–9.

12. Sherer RD, Fath MJ, Da Silva BA, Nicolau AM, Miller NL. The importance of potency and durability in HIV patient antiretroviral therapy preferences: a telephone survey. AIDS Patient Care STDS. 2005; 19:794–802.

13. Bakken S, Holzemer WL, Brown MA, Powell-Cope GM, Turner JG., Inouye J, et al. Relationships between perception of engagement with health care provider and demographic characteristics, health status, and adherence to therapeutic regimen in persons with HIV/AIDS. AIDS Patient Care STDS. 2000; 14:189–97.

14. Badia X, Podzamczer D, Lopez-Lavid C, Garcia M. Medicina basada en la evidencia y la validación de cuestionarios de calidad de vida; la versión española del MOS-HIV para la evaluación de la calidad de vida en pacientes infectados por el VIH. Enferm Infecc Microbiol Clin. 1999; 17 (Suppl 2):103–13.

15. Wu AW, Rubin HR, Mathews WC, Ware JE, Brysk LT, Hardy WD. A health status questionnaire using 30 items from the Medical Outcomes Study. Preliminary validation in personas with early HIV infection. Med Care. 1991; 29:786–98.

16. Cañadas I, Borges A, Sánchez Bruno A, San Luis. Estudio de la potencia de los contrastes de medias con dos y tres grupos con tamaño de efecto pequeño y en condiciones de no normalidad y homo-heterocedas. Psicothema 2000;12 (Suppl 2):114–6.

17. Ajzen I, Fishbein M. Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs. New York: Prentice Hall, 1980.

18. Ewart CK. Social action theory for a public health psychology. Am Psychol. 1991; 46:931–46.

19. Rodríguez-Marín J. Psicología Social de la Salud. Madrid: Síntesis, 2001.

20. Secretaría del Plan Nacional sobre el Sida/Centro Nacional de Epidemiología. Área de Vigilancia y Conductas de Riesgo. Vigilancia epidemiológica del VIH/Sida en España: Sistema de información sobre nuevos diagnósticos de VIH y registro nacional de casos de Sida 2012. Madrid: Secretaria de Plan Nacional sobre el Sida. Disponible en: http://www.msc.es/ciudadanos/enfLesiones/enfTransmisibles/sida/vigilancia/InformeVIH-sida_Junio2012.pdf (Consulta marzo 2015)

21. Ventura Cerdá JM, Martín Conde MT, Morillo Verdugo R, Yébenes Cortés M, Casado Gómez MA. Adherencia, satisfacción y calidad de vida relacionada con la salud en pacientes infectados por el VIH con tratamiento antirretroviral en España. Estudio ARPAS.Farm Hosp. 2014;38:291-9 .