

# Gender differences in adherence to treatment and illness behavior in HIV/AIDS patients: an exploratory study in Spain<sup>1</sup>

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## ABSTRACT

In this paper we have analyzed the gender differences in adherence to treatment and illness behavior of HIV/AIDS patients. The sample consisted of 69 HIV patients, taking HAART, obtained at the Castellón General Hospital Internal Medicine Service. We evaluated, not only the variables directly linked with the adherence such as the patient's report about the change of risk behaviors, the compliance with the drug treatment and the assistance to the medical appointments, but also other illness behavior variables that can be related such as the patient's assessment about the illness seriousness, his/her expectations about the treatment or his/her relationship with the doctor. In general, the results do not show significant statistical differences between men and women. Significant differences are obtained in only 6% of variables, specifically in some risk factors and in the belief (higher in women) that the antiretroviral treatment will be completely ineffective. Logistic regression analysis do not evidence that sex contribute to predict adherence.

*Key words:* HIV, AIDS, adherence, gender differences

## RESUMEN

En este artículo se analizan las diferencias sexuales en la adhesión al tratamiento y la conducta de enfermedad de los pacientes con infección por VIH/SIDA. La muestra está compuesta por un total de 69 pacientes seropositivos y con SIDA tratados con HAART (terapia antirretroviral altamente activa) y extraídos del Servicio de Medicina Interna del Hospital General de Castellón. Se evalúan no sólo las variables-criterio directamente relacionadas con la adhesión al tratamiento como son el informe del paciente acerca del cambio de hábitos desde su diagnóstico, el seguimiento del tratamiento farmacológico y la asistencia a las visitas médicas, sino también otras variables de conducta de enfermedad que pueden estar relacionadas con éstas últimas, como la valoración del paciente acerca de la gravedad de la enfermedad, sus expectativas acerca del tratamiento o la relación con el médico. En general, los resultados no muestran grandes diferencias estadísticamente significativas entre hombres y mujeres en lo que respecta a la adhesión

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al tratamiento de la infección por VIH/SIDA y su conducta de enfermedad. Tan sólo se obtienen diferencias significativas en el 6% de las variables comparadas, concretamente en algunos de los comportamientos o factores de riesgo y en la creencia (mayor en las mujeres) de que el tratamiento antirretroviral será completamente ineficaz. Los análisis de regresión logística no muestran que la variable sexo contribuya a predecir la adhesión. *Palabras clave:* VIH, SIDA, adhesión, diferencias sexuales

As Perloff (2001) said: “AIDS occurred during a time when scientists thought they had won the battle against infectious disease... Then AIDS struck and shattered these illusions. AIDS also reminded us that when it comes to death and disease we are not the rational, mature people we like to think we are” (pp. VII).

The antiretroviral drugs development, fundamentally those called “Inverse transcriptasa inhibitors” (INTI) and “Proteasa inhibitors” and, more specifically, the combination of three or more of these drugs (that is known as HAART “highly active antiretroviral therapy”) since 1996 has made possible a noticeable change in the patient’s condition with HIV infection/AIDS, improving, not only the survival rates, but also the quality of life.

#### A CRITICAL PROBLEM

Paradoxically, in spite of the drug treatment against the HIV infection being today more effective than ever, there are more and more researchers and clinics that report low levels of adherence with drug treatment programs (Aversa & Kimberlin, 1996; Ballester, Reinoso, García & Campos, 2000; Chesney, 1997; Gwadz, De-Vogli, Rotheram-Borus, Díaz, Ciseck, James & Tottenham, 1999; Ickovics & Meisler, 1997; Kalichman, 1998; López, Juega, Baliñas, Pita, Margusino, Picallos & Pedreira, 1999; Samet, Libman, Steger, Dhan, Chen, Shevitz, Dewees-Dunk, Levenson, Kufe & Caven, 1992). Because patients have more difficulty adhering to complex regimes, HAART-regimes that include multiple medications with specific dose-spacing requirements are likely to prove especially difficult when compared to simpler monotherapies (usually AZT) before 1996 (Catz, Kelly, Bogart, Benotsch & McAuliffe, 2000).

In most of the studies it was found that approximately a 50% of the patients did not appropriately follow the treatment. Besides, the adherence to treatment in those patients with HIV infection not only involves taking the prescribed drugs, but also includes other aspects such as the adoption of reinfection preventive measures and the medical appointments attendance (Holzemer, Corless, Nokes, Turner, Brown, Powell-Cope, Inouye, Henry, Nicholas & Portillo, 1999). Samet *et al.* (1992), found that approximately one third of persons who took INTI stopped their treatment, a fact that appears corroborated by Chesney (1997) and Ickovics & Meisler (1997). Another third appear to alter the treatment schedules deliberately (Aversa & Kimberlin, 1996). In Gwadz *et al.* study (1999) the percentage of non-adherence is 50%. A similar result (50%) was found in the treatment of HIV infected children, although clearly, the

responsibility for this problem must lie once again with the adults' behavior (parents), in charge of administering the drugs to the children (Albano, Spagmoto, Canani & Guarino, 1999).

In Spain, López et al. (1999) found that 56% of patients did not attend the programmed day at the pharmacy service, 10-20% did not attend the programmed appointment with the Internal Medicine Service and 50% did not take the drugs at the prescribed hours. Torres, Carmona, López-Briz, Abril, Ortega & López (1999) found that 53% of patients did not carry out the treatment. Also, Ballester *et al.* (2000) recently obtained data referring to the three aspects of adherence previously mentioned, finding that 53% of patients with HIV infection sometimes stopped taking the drugs prescribed by the doctor, 14% continue carrying out the same risk practices which caused them the HIV infection and 10% did not follow with the medical care program.

Highly active antiretroviral therapy (HAART) suppress HIV viral load to undetectable levels, increases indicators of immune system functioning such as CD4 lymphocytes, improves clinical health and decreases AIDS-related mortality. But research shows that even modest nonadherence to HAART greatly diminishes the benefits of treatment (Catz *et al.*, 2000).

#### FACTORS RELATED TO ADHERENCE

These facts highlight the importance of knowing the factors related with the treatment adherence problems, in order to take account of them at the time of prescribing programs of whose objective is to improve this adherence (Altice & Friedland, 1998). Until now, we know from different studies the significance of certain variables such as cultural beliefs (Erwin & Peters, 1999), illness seriousness perception (Ballester *et al.* 2000), perception about the treatment effectiveness (Ballester *et al.* 2000; Mehta, Moore & Graham, 1997), complexity of treatment (Kastrissios, Suarez, Katzenstein, Girard, Sheiner & Blaschke, 1998; Murphy, Johnston & Martin, 2000; Torres *et al.*, 1999), perceived susceptibility-inaction (Gao, Nau, Rosenbluth, Scott & Woodward (2000), intolerance to side-effects (Catz *et al.*, 2000; Rabkin & Chesney, 1998; Roca, Gómez y Arnedo, 2000), belief about the drug's toxicity (Perry, Ryan, Ashman & Jacobsberg, 1992; Smith, Rapkin, Morrison & Kammerman, 1997), doctor's relationship with the patient (Ballester *et al.* 2000; Gerbert, Love & Caspers, 1999; Gordillo, 1999; Murphy *et al.*, 2000; Roberts & Volberding, 1999; Roberts, 2000; Stall, Hoff, Coates, Paul, Phillips, Estrand, Kegeles, Catania, Daigle & Diaz, 1996), instability in patient's life, such as the homeless (Bangsburg, Tulsy, Hecht & Moss, 1997; Besch, 1995), depressive mood (Avants, Margolin, Warburton, Hawkins & Shi, 2001; Catz *et al.*, 2000; Gordillo, Del Amo, Soriano & Gonzalez-Lahoz, 1999; Holzemer *et al.*, 1999; Murphy *et al.*, 2000; Remor, 2002; Singh, Squier, Sivek, Wagener, Nguyen & Yu, 1996), lack of social support (Catz, Mc Clure, Jones & Brantley, 1999; Catz *et al.*, 2000; Remor, 2002), the same patient's characteristics in relation to his/her health behaviors as, for example, alcohol consumption (Petry, 1999), and the drugs consumption history (Avants *et al.*, 2001; Ballester *et al.*, 2000; Gordillo *et al.* 1999; Gwadz *et al.*, 1999; Haubrich, Little, Currier, Forthal, Kemper, Beall, Johnson, Dube, Hwang & Mc Cutchan, 1999; Kaplan,

Parham, Soto-Torres, Van Dyck, Greaves, Rauch, Ellis & Amandus, 1999; Moathi, Carrieri, Spire, Gastaut, Cassuto & Moreau, 2000; Singh *et al.*, 1996), or simply forgetting (Chesney, Ickovics, Chambers, Gifford, Neidig, Zwickl & Wu, 2000; Hecht, 1997).

#### GENDER AND ADHERENCE

Although, as can be observed, there have been some studies that try to investigate which factors are related to the lack of adherence to treatment in patients with HIV infection, still it is necessary to go on studying the possible influence of other variables as, for example, gender, as well as whether these variables operate only by themselves or in relation with some others that determine the individual decision to continue or not with the treatment. We can find in the literature some studies that have assessed the relationship between gender and adherence (Freeman, Stewart DeMasi & Saag, 1999; Hearn, 2001; Hellinger, 1993; Schuman, Ohmit, Cohen, Sacks, Richardson, Young, Schoenbaum, Rompalo & Gardner, 2001; Stone, Clarke, Lovell & Mayer, 1997). Most of them have found no relationship between the two variables and those studies that have found a relationship have produced mixed findings in terms of the direction of the relationship.

#### OBJECTIVE

The purpose of this paper is to examine gender differences found in the pattern of adherence to treatment and illness behavior of Spanish patients with HIV infection. In this way, we did not only consider the variables directly related with adherence, such as taking drugs, continuation of medical appointments and change in risk behaviors, but also other illness behavior variables that can be influencing these, such as the risk behavior for HIV transmission, the problems the patient is faced with after the diagnosis, the perception of social support, the perception of the illness seriousness, the expectations with regard to the treatment, the assessment of the problems subsequent to the treatment and his/her relationship with the doctor.

#### METHOD

##### *Participants*

A total of 69 patients with HIV infection taking HAART were recruited for our study. All patients were treated at the Preventive Medicine Service in the General Hospital of the city of Castellón (Spain), 55% of the sample (N= 38) were men, and the rest, women (N= 31). The mean age of patients in the sample was 34.5 years (between 23 and 61 years old) (SD= 8.3). 49.3% were unmarried, 18.8% were married, 23.2% were separated or divorced and 8.7% were widowed. Finally, with regard to the illness duration, the mean time since diagnosis was 7.7 years (SD= 4.6) (between 6 months and fifteen years).

### *Measures*

To carry out the investigation we used a structured interview (Adherence to treatment interview, EAT-HIV of Ballester *et al.*, 2000), consisting of a total of 29 open answer questions in some cases and closed answer (multiple choice) questions in others. The EAT-HIV includes seven blocks of information required to patient.

In the first block, related with the behavior and risk factors, we obtained information about whether the patient had been addict to drugs, had shared syringes, had maintained sexual contacts with HIV positive homosexuals or bisexuals, or sporadic sex with different partners without condoms. We explored whether the patient had exercised prostitution or had had sexual contacts with prostitutes; if he/she had suffered sexual transmission illness, either, hepatitis B or C in the last 10 years or if he/she had pricked hem/herself with any object suspected of being contaminated. Also we asked to patients if they had changed their risk behaviors since diagnostic.

The second block, referred to “HIV diagnosis”, included three questions related with the reasons for having made the antibodies detection test, the problems that they encountered after the diagnosis and, specifically, the social support perceived in such moments.

The third block of questions refers to the beliefs that patients have about their illness, both the seriousness and its duration.

The fourth block is closely related to the patient's pharmacological treatment. Here information is included about whether the patient is taking some treatment, his/her belief about effectiveness of the treatment and his/her expectations about the consequences of continuing the treatment or not.

The fifth block of questions is related to what is referred to as “antiretroviral treatment adherence problems”. In this block, we questioned the patients if at any time they had stopped taking the pharmacological treatment, why they had taken this decision and, more specifically, if they were worried about the side-effects of the antiretroviral drugs.

The sixth block is also closely related with the patients' adherence but in a more extensive meaning, since it does not refer to whether the antiretrovirals are taken or not (pharmacological adherence), but rather the overall following of the treatment which supposes visiting the doctor every time he/she makes an appointment with the patient. We evaluated too their concerns on going to the appointments.

Finally, the last block of questions analyze the relationship between doctor-patient, a factor which can be very important in the patient's adherence to treatment. In this block, we questioned patients if they had informed to the doctor about their concerns with the antiretrovirals side-effects, if they expressed doubts about their illness and the treatment, if they felt understood by doctor, if they considered that they had a good relationship with him/her, if doctor had informed them about the illness, and if they thought that doctor dedicated enough time in the visits.

The structured interview (EAT-HIV) was administered at the Hospital by three students taking doctorate in Psychology in an individual, voluntary way and, obviously, after having obtained the informed consent of the patients. So, the adherence to treatment

indicators used in this work were based on the patients self-report. Even though we know that self-report in general overestimates adherence compared with more objective measures such as electronic monitoring (Bangsberg, Hecht, Charlebois, Zolopa, Holodniy, Sheiner, Bamberger, Chesney & Moss, 2000; Wagner & Rabkin, 2000), it is nevertheless a good predictor of drug treatment effectiveness (Haubrich *et al.*, 1999).

### Data Analyses

For the analysis of differences according to sex in the different evaluated variables we used the Chi square test for all those variables of categorical answers (most of them) and the “t Student” test only to analyse the differences between the age variable and the seriousness illness perception. Also we performed logistic regression analysis in order to determine the independent influence of sex on treatment adherence.

## RESULTS

### Sexual differences in age of patients

There were no significant differences in function of sex according to the patient's age  $t(65) = 1.66$ ,  $p < .102$ ), even though the mean age of men ( $M = 35.7$ ,  $SD = 8.2$ ) is

**Table 1 Gender differences in behaviors or risk factors.**

Variables	MEN (%) (n=38)	WOMEN (%) (n=31)	Chi-Square	p<	
<i>Behavior risk factors</i>	To have been addict to drugs	76.5	64.7	0.91	.341
	To have shared sirynges	70.6	58.8	0.81	.369
	To have had sexual contacts with HIV positive homosex.. or bisex.	35.3	70.6	6.44	.011
	Sexual relations without condoms	45.1	41.2	0.08	.778
	To have exercised prostitution	2.0	29.4	11.94	.000
	To have maintained sexual contacts with sex workers	51.0	0	14.03	.000
	To have had sexual transmission illness	62.7	58.8	0.48	.784
	To have prick oneself accidentally with objects suspected of being infected	15.7	11.8	0.52	.771
<i>Perceived way of infection</i>	Sexual	23.5	37.5	5.89	.208
	Sryringes	60.8	50.0		
	Doesn't know	9.8	0		
<i>Change of risk behaviors</i>	Yes	83.7	93.8	1.03	.311

higher than women ( $M= 31.6$ ,  $SD= 8.2$ ).

### *Behaviors or risk factors*

The results (see Table 1) showed that 76.5% of men were or had been drug addicts, compared with 64.7% of women; 70.6% of men had shared syringes compared with 58.8% of women. 35.3% of men had had sexual relations with HIV positive homosexuals or bisexuals compared with 70.6% of women  $\chi^2(1, N= 69)= 6.44$ ,  $p<.011$ . 45.1% of men had had sporadic sexual contacts with different partners without using condoms compared with 41.2% of women. 2% of the men had exercised prostitution compared with 29.4% of women  $\chi^2(1, N= 69)= 11.94$ ,  $p<.000$ .

On the opposite, 51% of men had maintained sexual relations with sex workers compared with 0% of women  $\chi^2(1, N= 69)= 14.03$ ,  $p<.000$ . As regards sexual transmission diseases, hepatitis B or C, the percentages are very similar: 62.7% of men compared with 58.8% of women. Finally, 15.7% of men claimed to have pricked themselves accidentally with objects suspected of being contaminated with HIV, compared with 11.8% of women. In conclusion, men evidenced higher percentages in practically all the risk factors, except in having exercised prostitution and having had sexual contacts with HIV positive homosexuals or bisexuals. However, the differences were statistically significant only in these last variables and with men having maintained sexual contacts with sex workers.

**Table 2 Gender differences in variables related with the HIV diagnosis.**

<i>Variables</i>		<i>MEN (%)</i> <i>(N=38)</i>	<i>WOMEN (%)</i> <i>(N=31)</i>	<i>Chi-Square</i>	<i>p&lt;</i>
<i>Reason to make the diagnosis test</i>	To feel ill	15.4	5.9	1.02	.312
	Because of suggestion	26.9	23.5	0.08	.782
	Curiosity	5.8	5.9	0.000	.986
	Risk practices	26.9	29.4	0.04	.841
	Routine check-up	21.2	23.5	0.04	.837
<i>Problems after the infection diagnosis</i>	Problems with family	17.6	5.9	1.41	.235
	Rupture with partner	7.8	11.8	0.24	.621
	Emotional disorder or depression	72.5	76.5	0.10	.751
	Problems in job	11.8	0	2.19	.138
	Problems with friends	7.8	0	1.42	.234
<i>Social support perception</i>	Yes	85.7	81.3	0.72	.868

In relation with this behavior, we also asked the patients how they considered they had become infected and if they had modified their risk behavior since the diagnosis was made. The perceived infection way was sex in 23.5% of men compared with 37.5% of women; blood (syringes exchange) in 60.8% of men compared with 50% of women; and we found that 9.8% of men and 0% of women did not know how they had become infected. The differences between sexes, however, do not bear significant statistical relevance.

Finally, in this first block related with risk behavior, 83.7% of men and 93.8% of women claimed to have changed their risk behavior in the last years. Although this difference does not reach statistical significance either, our findings show that women are more likely to change their risk behaviors than men.

### *Variables related with the HIV diagnosis*

With regard to the reason which had led to do the diagnosis test (see Table 2), the realization of having carry out risk practices occupied the first place for men (26.9%) and women (29.4%). For men this first place was shared with "the suggestion of another person" (26.9%) and this was the second motive for women (23.5%). Among the women the same percentage was found (23.5%) for the motive of "doing a routine check-up", which was also the third motive for 21.2% of the men. The fact of feeling sick drove the 15.4% of men to do the test and only 5.9% of women. Finally, with practically the same percentage of men (5.8%) and women (5.9%) curiosity is situated.

After the diagnosis, 72.5% of men had suffered depression or anxiety symptoms, which were more frequent among women, with 76.5%. Men were revealed to have had more problems than women with the family (17.6% compared with 5.9%), work (11.8% vs. 0%) and friends (7.8% vs. 0%). However, problems with the partner were more frequent among women (11.8%) than among men (7.8%).

Finally, 85.7% of men felt supported by the persons around them when the

**Table 3 Gender differences in beliefs with regard to diagnosis.**

<i>Variables</i>		<i>MEN (%)</i> <i>(N=38)</i>	<i>WOMEN (%)</i> <i>(N=31)</i>	<i>Chi-Square</i>	<i>p&lt;</i>
<i>Illness seriousness perception</i>	Light	5.8	23.5	4.85	.303
	Moderate	26.9	17.6		
	Serious	40.4	35.3		
	Very serious	25.0	23.5		
<i>Belief about illness duration</i>	It never will cure	28.6	26.7	2.70	.746
	It will take a long time	16.7	26.7		
	Normal duration	2.4	0		
	It will be cured quickly	21.4	26.7		



diagnosis was communicated, compared with the 81.3% of women, a difference of little statistical significance.

To summarize, in none of the three variables related with the HIV diagnosis did we find significant differences between both sexes.

### *Beliefs with regard to disease*

With regard to the infection seriousness perception (see Table 3), women seem to perceive the HIV infection as less serious and men seem to perceive it as more serious. So, for 5.8% of men and 23.5% of women, AIDS is a minor illness; for 26.9% of men and 17.6% of women it is a moderately serious disease; for 40.4% of men and 17.6% of women it is a serious disease; finally for 25% of men and 23.5% of women it is a very serious illness. When we compared the mean of both sexes and applied the "t Student" test, the results gave a mean of 2.8 for men (SD= 0.9) and 2.6 for women (SD= 1.1) with no statistical significant  $t(65) = 0.79, p < .432$ .

This optimistic tendency in women is less clear in their beliefs about the illness duration. 21.4% of men and 26.7% of women felt their illness would soon be cured; 16.7% of men and 26.7% of women felt their illness would take a long time to be cured; and 28.6% of men and 26.7% of women thought they would never be cured.

In general, in none of these variables we obtained significant differences according to sex.

### *Beliefs with regard to antiretroviral treatment*

88.2% of men were receiving some treatment compared with 76.4% of women (see Table 4). Perhaps in relation to this, the percentage of men that considered the

**Table 4. Gender differences in variables related to antiretroviral treatment: valuation and expectations.**

<i>Variables</i>		<i>MEV (%)</i> <i>(N=38)</i>	<i>WOMEN (%)</i> <i>(N=31)</i>	<i>Chi-Square</i>	<i>p &lt;</i>
<i>To take antiretrovirals (receiving treatment)</i>	Yes	88.2	76.4	2.36	.305
<i>Treatment valuation</i>	Positive valuation	85.0	73.3	3.01	.221
	Cure	21.3	12.5	0.59	.440
	To feel better	19.1	25.0	0.25	.617
<i>Treatment expectations</i>	To decrease the illness advance	70.2	81.3	0.74	.390
	To wait anything	4.3	0	0.70	.402
	To get worse	72.3	75.0	0.04	.836
<i>Expectations without treatment</i>	It never should cure	10.6	12.5	0.04	.838
	Death	19.1	18.8	0.00	.972

treatment they were taking appropriate was higher, 85%, compared with 73.3% in women.

However, when we analysed the expectations that men and women had with regard to the consequences of continuing the prescribed treatment, we found more realistic women than men. Therefore, an excessively optimistic attitude was found in men, 21.3% believed that with treatment they would be cured, compared with the 12.5% of women. And, at the same time, a more pessimistic attitude was found among

**Table 5. Gender differences in problems following the pharmacological treatment and factors related to these**

<i>Variables</i>		<i>MEN (%)</i> <i>(N=38)</i>	<i>WOMEN (%)</i> <i>(N=31)</i>	<i>Chi-Square</i>	<i>p&lt;</i>
<i>Not taking the treatment sometimes</i>	Yes	51.1	60	0.36	.546
<i>Causes of not taking antiretrovirals</i>	Excessive number of pills	20.7	25	0.07	.793
	Side-effects	21.4	25	0.04	.830
	Forgetting	42.9	37.5	0.07	.786
	Belief that treatment is not effective	0	12.5	3.60	.050
<i>Worry for medication specific effects</i>	Yes	48.6	64.3	0.99	.318

men, 4.3% compared with 0% of women stated they did not expect anything of treatment. Women, on the other hand, answered more frequently that with treatment they would feel better (25% of women compared with the 19.1% of men) and the illness advance would decrease (81.3% of women vs. 70.2% of men) which constitutes more realistic expectations at the time of antiretroviral treatment.

Differences between sexes scarcely exist in expectations about the consequences of not continuing with the treatment. 72.3% of men and 75% of women thought that if treatment did not continue, the illness would get worse. 10.6% of men and 12.5% of women considered that without treatment they would never be cured. Finally, 19.1% of men and 18.8% of women thought that if they did not have any treatment it could lead them to death.

In short, with regard to the pharmacological treatment, in spite of not finding any significant statistical difference according to sex, the men's situation is more favourable than the women's in some aspects (the men take some treatment more frequently and also show a more positive attitude towards this treatment) and less in others (the expectations of the women about the treatment's effects are more realistic than the men's). It could be said that the women's attitude regarding the treatment is more critical than the men's.

*Problems following the pharmacological treatment and factors related.*

Without large statistical significance, the percentage of women who had stopped taking the treatment was higher (60%) than men (51.1%)  $\chi^2 (1, N= 69)= 0.36, p< .546$  (see Table 5).

When we analysed the reason for this behavior we found that the first for both

**Table 6. Gender differences in attendance to medical appointments and the reasons associated.**

<i>Variables</i>		<i>MEN (%) (N=38)</i>	<i>WOMEN (%) (N=31)</i>	<i>Chi-Square</i>	<i>p&lt;</i>
<i>To attend to medical appointments</i>	Yes	90	88.2	0.04	.837
<i>Causes of not attending to medical examinations</i>	Concern about knowing that illness doesn't improve with treatment	23.3	33.3	0.59	.443
	Worry about getting worse	53.5	46.7	0.21	.649
	Excessive frequency of visits	7	0	1.10	.293
	Bad relationship with doctor	4.7	0	0.72	.395
	To worry about nothing	16.3	33.3	1.97	.160

sexes was forgetting: 42.9% of men vs 37.5% of women. The second reason was the side-effects of the drugs: 21.4% of men and 25% of women. The third for the men (20.7%) and with the same percentage as the second one in the case of the women (25%) was the excessive number of pills.

Finally, 12.5% of the women and no men (0%) believed that the treatment would have no effect on their illness, which does reach statistical significance  $\chi^2 (1, N= 69)= 0.360, p< .050$ . We also found a higher percentage of women concerned about particular side-effects (64.3%) than men (48.6%) without this difference being significant.

In short, analysing the problems of following drug treatment, we can conclude that these are fewer in women and, besides, the factors determining them are different in men and women. For men, it seems that forgetting is more relevant than for women, who are more affected by the amount of pills that the treatment prescribes and the worry about their side-effects. Again we confirmed the greater critical attitude towards treatment continually observed in women, with an important statistical difference with regard to the belief that the treatment would have no effect on the illness.

*Attendance to medical appointments and the reasons associated*

In this block of questions, we found practically the same results in both sexes. 90% of the men and 88.2% of women go to the surgery every time the doctor makes an appointment for a medical examination (see Table 6).

Regarding the question about their concerns on going to the appointments, some differences appear between sexes, although not statistically significant. What men (53%) and women (46.7%) most worry about is the possibility of knowing that they have got worse. 33.3% of women compared with 23.3% of men worry about knowing that the illness is not responding to the treatment. We also found an identical percentage in women, 33.3% compared with 16.3% of men who claim not to worry about anything when the appointment moment arrives. Finally, we found two concerns in men which were absent in women. 7% of men worry about the excessive frequency of visits (0% of women). And 4.7% of men worry about their bad relationship with the doctor at the medical appointment (0% of women).

To summarize, significant statistical differences are not found relating to the attendance to medical appointments. However, some differences were found in the degree of worry and in what worried the two sexes before the examinations, finding that women worry less than men, and, in women, the worries centre in knowing that they are getting worse, and that the illness is not responding to the treatment. Besides these questions, men worry about the excessive frequency of the visits and the bad relationship with the doctor.

#### *Doctor-patient relationship.*

From the outset, we can say that we did not find statistically significant differences between men and women in their answers about doctor-patient relationship (see Table 7). 77.8% of men and the 80% of women told the doctor about their worries concerning the antiretrovirals side-effects. 81.1% of men and 83.3% of women expressed to doctors their doubts about the illness and its treatment. 79.6% of men and 82.4% of women felt understood by the doctor. 86% of men and 87% of women considered that they had a good relationship with the doctor. 91.7% of men and 82.4% of women stated that the

**Table 7. Gender differences in doctor-patient relationship.**

<i>Variables</i>	<i>MEN (%) (N=38)</i>	<i>WOMEN (%) (N=31)</i>	<i>Chi-Square</i>	<i>p&lt;</i>
Communication to doctor about the worry for side-effects	77.8	80	0.02	.891
To ask to doctor doubts about illness and treatment	81.1	83.3	0.03	.861
<i>Relation with doctor</i>				
To feel understood by doctor	79.6	82.4	0.67	.879
Good relationship with doctor	86	87	1.23	.745
Doctor has informed about illness	91.7	82.4	1.13	.287
Doctor dedicates time enough	77.6	76.5	0.02	.992

doctor had informed appropriately to them about their illness. Finally, 77.6% of men and 76.5% of women thought that the doctor devoted enough time to them in the medical visits. Therefore, we can say that a high percentage of men and women agree they have a good relationship with their doctor, including the time dedicated, communication between the doctor and patient and feeling understood by him.

### *Logistic regression analysis predicting adherence*

Given that multiple variables may influence adherence, we performed logistic regression analysis in order to determine the independent influence of sex on adherence. We selected as main dependent variables related with adherence patients' reports about having stopped medication, not attending appointments with doctor and not changing risk behaviors. Regression models were not significant to predict stopping medication (odds ratio [OR]= 0.83, Model  $\chi^2$  [1, N= 69]= 0.37,  $p < .545$ ), attending appointments with doctor (odds ratio [OR]= 1.09, Model  $\chi^2$  [1, N= 69]= 0.04,  $p < .839$ ) and changing risk behaviors (odds ratio [OR]= 0.58, Model  $\chi^2$  [1, N= 69]= 1.18,  $p < .276$ ). So, we conclude that logistic regression analysis do not evidence that sex contribute to predict adherence.

## DISCUSSION

To summarize, this exploratory and descriptive study has examined gender differences in HIV Spanish patients with regard to adherence and other illness behavior variables related with treatment. From the previous results, we can propose a first general conclusion: we did not found large significant statistical differences between men and women with regard to adherence to treatment and illness behavior in HIV infection/AIDS patients. The previous overall conclusion is derived from the following fact: among a total of 52 variables compared between both sexes, we only found significant differences in four of them, that is, in 5.7% of variables. Besides, three of them refer to risk behaviors, specifically, we found that the women had had more sexual contacts with HIV positive homosexuals or bisexuals, had practised more prostitution and had had fewer relations with sexual workers. The other variable in which we found significant differences between sexes refers to the belief that the antiretroviral treatment will be completely ineffective, much more frequent among women than in men. Also, logistic regression analysis do not evidence that sex contribute to predict adherence in our sample.

Until now several studies have assessed the relationship between gender and adherence (Freeman *et al.*, 1999; Hearn, 2001; Hellinger, 1993; Schuman *et al.*, 2001; Stone *et al.*, 1997). In general, we agree with some studies carried out in Spain, such as that of Román, Nieto, Mansilla, Salas, Vallejo & García (1999) and Pedreira (1999) and with others carried out in other countries such as Singh *et al.* (1996), Haubrich *et al.* (1999), Holzemer *et al.* (1999), Kaplan *et al.* (1999), Catz *et al.* (2000) and Kempainen, Levine, Mistal y Schmidgall (2001) who did not find that the two sexes differed significantly in adherence to treatment. Kastrissios *et al.* (1998) found too that

in general, patients characteristics were poorly predictive of adherence.

However, the general results commented above does not mean that certain differences or characteristics among men and women did not exist in our study. The variables analysed demonstrated certain tendencies all through our research, although these differences were not always statistically relevant.

Following our findings, we can make these specific commentaries:

- 1- First, men had higher percentages in practically all the risk factors with the exception of having exercised prostitution and having had sexual contacts with HIV positive homosexuals or bisexuals. These risk factors included being or to have been a drug addict, to have shared syringes, to have maintained sexual relations without condoms, to have suffered sexual transmission illness and to have pricked oneself accidentally with objects suspected of being infected.
- 2- With regard to the transmission way, as we know by epidemiological data, the sexual one is more frequent in women than in men, and the blood way (syringe exchange) is more common in men.
- 3- Women tend to modify their risk behaviors with more frequency than men.
- 4- There are practically no differences in the motives which lead men and women to make the antibody detection test. The main reason for both sexes is the knowledge of having carried out risk practices. This was absent in 27-29% of the subjects.
- 5- After the illness diagnosis, emotional disorders such as depression or anxiety are more reported by women than men. Also, men reveal more social difficulties than women with the family, work and friends. However, problems with the partner are more frequent among women. The social support perception is somewhat higher in men than in women.
- 6- With regard to the illness seriousness perception, women seem to value the HIV infection as less serious than men.
- 7- With regard to the pharmacological treatment, the men's situation is more favourable than the women's in some aspects (men take more frequently some treatment and show also a more positive attitude towards the treatment) and less in others (the expectations of women about the treatment's effects are more realistic than the men's, who are more frequently excessively optimistic or pessimistic). Women's attitude towards the treatment is more critical than the men's.
- 8- Adherence to pharmacological treatment is less in women than in men and the factors that influence this are different in both sexes. For men, forgetting is the most important factor while women are more concerned about the number of pills they have to take and their side-effects. Women have less faith in the treatment and worry more about the side-effects of the medication.
- 9- Differences between men and women concerning to attending medical appointments have not been observed. However, there are some differences

in the degree and in the kind of concern, finding women less worry than men and, worry about knowing they are getting worse and that the illness is not responding to treatment. Besides these questions, men worry about the excessive frequency of check-ups and the bad relationship with the doctor.

- 10- Finally, regarding the doctor-patient relationship, we did not find differences between men and women. Most of the men and women agreed they had a good relationship with the doctor, including satisfaction about the time of dedication to the patient, the communication with the doctor and the feeling of being understood.

Perhaps these differences between men and women in variables related to illness behavior and adherence to treatment do not reach statistical significance because of the limited number of patients included in sample. Then, further research in this area using a higher number of patients and controlling for the possible effect of other variables in gender differences is needed.

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