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## ABSTRACT

Studies that explore gender differences in the health-related quality of life (HRQOL) of people living with HIV/AIDS (PLWHA) are scarce and contradictory. This study evaluated gender differences in the HRQOL of a group of 744 PLWHA. Participants had a median (IQR) age of 44 (37-48) years and had been diagnosed with HIV infection a median (IQR) of 12 (5-20) years before. The results showed important differences between genders in the variables that were related to better physical and mental health ( $p < 0.05$ ). Better physical health in men was related to being employed, not having economic worries, not receiving psychological support, not having injected drugs in the past, low negative mood HIV-related, low HIV illness representation, low internalized stigma and high body image satisfaction and health behavior. For women, the variables related were few years since HIV diagnosis and low enacted stigma-personal experience of rejection. Regarding mental health, the variables exclusively associated in men were being employed, not having injected drugs, having a stable partner, high health behavior, the use of problem solving coping, personal autonomy and personal meaning. In women, better mental health was exclusively related to high CD4 cell count, self-esteem and body image satisfaction, and negative mood HIV-related. Men and women coincided in the absence of past opportunistic infections to be related to better physical and mental health, and in the absence of side effects for physical health and low HIV-related stress and HIV illness representation for mental health. Our results highlight the need for

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detailed study of gender differences that identify the bio-psycho-socio inequalities that affect HRQOL. The interventions to improve HRQOL in PLWHA might be more effective if we consider gender perspective.

**Key words:** HIV/AIDS; health-related quality of life; gender differences; physical health; mental health.

## RESUMEN

Los estudios que exploran las diferencias de género en la Calidad de Vida Relacionada con la Salud (CVRS) de las Personas que Viven con el VIH/Sida (PVVS) son escasos y contradictorios. Este estudio evaluó la CVRS de un grupo de 744 PVVS. Los participantes tenían una mediana (RQ) de edad de 44 (37-48) años y habían sido diagnosticados hacía 12 (5-20) años. Los resultados mostraron diferencias importantes entre géneros en las variables relacionadas con mejor salud física y mental ( $p < 0.05$ ). Una mejor salud física se relacionó sólo en el caso de los hombres con tener empleo, no tener preocupaciones económicas, no haberse inyectado drogas en el pasado, un bajo humor negativo frente al VIH, una mejor representación de la enfermedad, bajo estigma internalizado y alta satisfacción con la imagen corporal y comportamiento de salud. Para las mujeres, las variables asociadas fueron menos años de diagnóstico de la infección por VIH y un bajo estigma-experiencia personal de rechazo. Respecto a la salud mental, las variables exclusivamente relacionadas en los hombres fueron tener empleo, no haber tomado drogas inyectadas, tener pareja estable, adecuado comportamiento de salud, uso de estrategias de afrontamiento de problemas, autonomía personal y significado personal. En las mujeres, una mejor salud mental se relacionó exclusivamente con alto recuento de células CD4, autoestima, satisfacción con la imagen corporal, y bajo estrés relacionado con el VIH. Hombres y mujeres coincidieron en la ausencia de enfermedades oportunistas pasadas

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como factores relacionados con mejor salud física y mental, ausencia de efectos adversos para la salud física y bajo estrés relacionado con la enfermedad y mejor representación de la enfermedad para salud mental. Nuestros resultados subrayan la necesidad de un estudio más detallado de las diferencias de género que identifique las desigualdades bio-psico-sociales que afectan a la CVRS. Las intervenciones para mejorar la CVRS en PVVS podrían ser más eficaces si consideraran la perspectiva de género.

**Palabras clave:** VIH/Sida; calidad de vida relacionada con la salud; diferencias de género; salud física; salud mental.

## INTRODUCTION

The development and administration of antiretroviral therapy (ART) has meant that HIV infection has become a chronic disease in the countries where treatment is accessible. This has caused an increase in the survival rate of people living with HIV infection/AIDS (PLWHA) (Wandeler, Johnson & Egger, 2016). Recent studies also emphasize the positive effect of the administration of ART on the improvement of health-related quality of life (HRQOL) (Lifson et al., 2017; Torres et al., 2018). Within this, great endeavours have been made to promote adherence to treatment and to reduce the side effects related to them (Degroote, Vogelaers & Vandijck, 2014; Fumaz et al. 2002). However, some studies indicate that PLWHA, even those with viral suppression and a good immune status, still report a worse HRQOL than the general population (including people with a severe disease) (Miners et al. 2014).

HIV infection seems to have other implications aside from the medical ones, and several studies highlight both medical (i.e. immune status and/or presence of symptoms) and psychosocial aspects (i.e. depression, social support, employment) as consistent predictors of HRQOL (Degroote et al., 2014; Rzeszutek & Gruszczyńska, 2018). Some authors criticize the fact that the majority of instruments used to measure HRQOL do not include important psychosocial factors, such as stigma or coping (Degroote et al., 2014; Ballester-Arnal et al. 2016). The peculiarity of stigma in HIV infection might explain the experience of higher

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distress and its impact on HRQOL (Rzeszutek, Oniszczenko & Firląg-Burkacka, 2012). Recurrent use of coping styles oriented towards emotion or avoidance appear to be related to higher trauma symptoms (Carvahal, 2010; Rzeszutek et al., 2012). On the contrary, the regular use of active instrumental coping strategies (i.e. an early start of antiretroviral treatment) might positively affect subjective wellbeing (Lifson et al., 2007).

Specific studies of the impact of gender on the HRQOL of PLWHA have generated contradictory data. Some studies find no differences (Rzeszutek, 2018), while others suggest that HRQOL seems to differ importantly between genders (Gebremichael, Hadush, Kebede & Zegeye, 2018; Tran et al., 2012; van der Kop et al., 2018). These contradictions may be due to several aspects, such as the cultural differences between countries (Nobre et al., 2016), the variety of questionnaires used (Cooper, Clatworthy, Hardin, Whetham & Emerge Consortium, 2017), or even the control variables used, like the socioeconomic level, that may notably influence the HRQOL of PLWHA (Chandra, Satyanarayana, Satishchandra, Satish & Kumar, 2009). From the gender perspective, the analysis of the quality of life of men and women should consider the asymmetry of gender. Some studies show that women with HIV face not only a chronic illness but also unique social challenges and discrimination (Carvalhal, 2010). This could partly explain higher levels of depression and worse quality of life in them (Mello, Segurado & Malbergier, 2010). Other studies point to the influence of traditional gender roles in quality of life. In low-resource countries, men with HIV have better access to economic and social resources, which is expected as their frequent role is that of bread winner (Chandra et al., 2009). On the other hand, married women or those in a stable partnership suffer from more risk of psychological distress due to having to cope with the disease and continuing as caregiving housewives. Finally, single or divorced women have less access to social and economic support (Solomon et al., 2008).

Together with this social reality, gender influence should be reviewed through factors already identified as related to HRQOL in PLWHA, like emotional disturbance, self-esteem, coping

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strategies, social support and stigma. Some authors report a higher prevalence of emotional disturbance and distress among women (Gordillo et al., 2009; Pereira & Canavarro, 2011; Sherr et al., 2012; Turner, Laine, Cosler, & Hauck, 2003; Valverde et al., 2007; Wisniewski et al. 2005). Regarding self-esteem, some studies say that it is higher among men (Kling, Hyde, Showers & Buswell, 1999), but other research did not find significant gender differences (Reilly & Woo, 2001). Concerning coping strategies, women seem to use more spiritual and/or avoidance coping and search for more social support (Tarakeshwar, Hansen, Kochman, & Sikkema, 2005), although previous research had not found significant differences (i. e., Kalichman, 1999). Thus, the relationship between gender and coping styles is still confusing. In populations with chronic disease or pain, contradictory results have not helped to throw light upon this relationship either (DeCoster & Cummings, 2004; Rollnik et al., 2003; Keefe et al., 2004).

Social support also generates debate, as in some studies men report more social support (Cederfjäll et al., 2001; Fasce, 2007; Reilly & Woo, 2004; Shamos, Hartwig, & Zindela, 2009), while in other studies no differences between genders are found (Bianco, Heckman, Sutton, Watakakosol, & Lovejoy, 2011; Colbert, Kim, Sereika, & Erlen, 2010; Legrand, 2010; Ruiz-Pérez et al., 2009), or the results go in the opposite direction (Coleman et al., 2006; Latkin et al., 1998).

Finally, some studies indicate that women with HIV perceive and experience more stigma, and they also fear suffering from it, which encourages them to hide their serostatus (Derlega, Winstead, Greene, Serovich, & Elwood, 2002; Sandelowski, Lambe, & Barroso, 2004; Swendeman, Rotheram-Borus, Comulada, Weiss, & Ramos, 2006; Wingwood et al., 2007).

These contradictory results require in depth study of gender differences in HRQOL of PLWHA.

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*Current study*

The objective of the current study was to evaluate whether men and women living with HIV infection would present differences in their HRQOL. We also aimed to study what variables would be related to a better physical and mental HRQOL in both genders.

Based on previous literature and our clinical practice, we hypothesized that we would observe differences in the HRQOL between genders and that women would report worse HRQOL than men. We also hypothesized that a better physical and mental HRQOL would be related to different variables between genders.

## **METHODS**

### *Study subjects, setting, design, measures and procedures*

This work forms part of a larger multicenter research taskforce addressing intervention and assessment of psychological predictors related to HRQOL in PLWHA. (see Remor et al. AIDS and Behavior 2012; Remor et al. AIDS and Behavior 2015; Ballester-Arnal et al. AIDS and Behavior 2016). Data were collected on patients attending 32 Spanish hospitals for HIV care. Participants were invited to take part in the study either during a follow-up visit to their doctor or on seeking help from one of the NGOs that collaborated in the study. The content of the research was explained to them and they were asked to collaborate on a voluntary basis. Those who agreed to do so filled in an informed consent sheet and the study assessment protocol. Finally, after filling in all the data, participants were paid €10 as compensation for the time spent on the study. The surveys were collected between the months of December 2010 and June 2011. This study was approved by the ethical committee of every University, Hospital and NGO participant.

Demographic and clinical variables were collected using a structured questionnaire designed ad hoc for this study. Participants completed also 2 questionnaires: the Screening tool for psychological issues related to HIV (Screenphiv) and the MOS-HIV.

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The Screenhiv questionnaire covers 6 factors and 23 facets through 63 items (see Table 1). The items are statements related with the different facets, which are to be answered on an analogical scale from 0 to 100, where 0 is not at all and 100 is a great deal. The psychometric properties of the instrument have been reported elsewhere (Remor et al., 2012; Remor et al., 2016).

The 35-item MOS-HIV questionnaire includes the dimensions of general health perception, pain, physical function, role function, social function, cognitive function, mental health, energy, health distress and quality of life. Subscales are scored on a 0-100 scale (a higher score indicates better health) and physical and mental health summary scores can be generated (Badía, Podzamczar, López-Lavid & García, 1999).

*Statistical analysis*

The Kolmogorov-Smirnov test was used to assess the distribution of continuous variables. Because these variables did not follow a normal distribution, they were expressed as median and interquartile range (IQR). Discrete variables were expressed as number of patients (percentages). Nonparametric data were compared using the Mann-Whitney test. Categorical variables were assessed using the Chi-square test or the Fisher exact test.

We used linear regression to identify covariates that were independently associated with physical and mental health (the scores obtained in the 2 summary dimensions of the MOS-HIV questionnaire). All variables with a significant association in the univariate analysis were introduced into the multivariate model, as well as those hypothesized to be associated with physical and mental health regardless of statistical significance. We used Backward variable elimination in order to select the final set of variables included in the model. Furthermore, the correlation of continuous variables was taken into account in order to avoid multicollinearity. The statistical analyses were performed using SPSS 15.0 (SPSS Inc, Chicago, Illinois, USA).

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All tests were 2-tailed, and a 95% confidence level was assumed. Data analyses were conducted according to a pre-specified plan and were not exploratory.

## RESULTS

### Characteristics of the study sample

The sample was composed of 744 patients, 538 (72.3%) of whom were men. Participants had a median (IQR) age of 44 (37-48) years and had been diagnosed with HIV infection a median (IQR) of 12 (5-20) years previously. The median (IQR) CD4 cell count was 500 (354-728), and 85.5% of the participants had an HIV-RNA viral load < 50 copies/mL. In women, time with HIV infection was longer ( $p=0.01$ ), and the CD4 cell count was higher ( $p=0.01$ ). Injection drug use as the route of HIV transmission was more frequent in men ( $p<0.01$ ), more men reported that they were homosexual ( $p<0.01$ ) or bisexual ( $p<0.01$ ), and that they were single or did not have a stable partner ( $p<0.01$ ). Women indicated more side effects ( $p=0.03$ ) and reported more that they were heterosexual ( $p<0.01$ ). The clinical and social characteristics of the study sample and the comparison between genders can be seen in Table 2.

### Gender differences in health related quality of life according to the Screenphiv and the MOS-HIV questionnaire

In the factors of the Screenphiv, women had higher scores in emotional distress experience related to HIV ( $p<0.01$ ), perceived rejection related to HIV and avoidance coping ( $p=0.01$ ), and personal experience of rejection ( $p<0.01$ ). Men reported higher in personal growing attitude and positive coping ( $p=0.04$ ). As for the facets, women reported lower scores in body image satisfaction ( $p<0.01$ ), and higher scores in HIV-related stress ( $p=0.01$ ), negative mood HIV-related ( $p<0.01$ ), internalized stigma ( $p<0.01$ ), poor sexual life ( $p=0.02$ ), enacted stigma-perceived group rejection ( $p<0.01$ ), enacted stigma-personal experience of rejection ( $p<0.01$ ), and body image disfigurement ( $p<0.01$ ). (Table 3)



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In the MOS-HIV, women scored lower than men in pain ( $p<0.01$ ), physical function ( $p<0.01$ ), mental health ( $p=0.06$ ), energy ( $p=0.04$ ), general physical health ( $p<0.01$ ), and general mental health ( $p=0.04$ ), and higher in health distress ( $p=0.04$ ). (Table 3)

**Variables associated with physical and mental health in men and women***Physical health*

In men, the multiple regression analysis revealed that the variables that remained associated with better physical health were absence of side effects ( $p<0.01$ ), being employed ( $p<0.01$ ), absence of psychological support ( $p=0.04$ ), absence of past opportunistic infections ( $p<0.01$ ), not having injection drug use as HIV transmission route ( $p=0.01$ ), higher scores in the facets of internalized stigma ( $p<0.1$ ), body image satisfaction ( $p=0.01$ ), and health behavior ( $p<0.01$ ), and lower scores in the facets of negative mood HIV-related ( $p=0.01$ ), HIV illness representation ( $p<0.01$ ), and economic worries ( $p=0.01$ ). In women, the variables associated with better physical health were less years since HIV diagnosis ( $p<0.01$ ), absence of side effects ( $p=0.01$ ), absence of past opportunistic infections ( $p<0.01$ ), and lower scores in enacted stigma-personal experience of rejection ( $p<0.01$ ). (Table 4)

*Mental health*

In men, the multiple regression analysis showed that the variables that remained associated with better mental health were not having injection drug use as HIV transmission route ( $p<0.01$ ), absence of past opportunistic infections ( $p<0.01$ ), having a stable partner ( $p<0.01$ ), being employed ( $p<0.01$ ), higher scores in health behavior ( $p<0.01$ ), problem solving coping ( $p=0.04$ ), personal autonomy ( $<0.01$ ) and personal meaning ( $p<0.01$ ), and lower scores in HIV-related stress ( $<0.01$ ) and HIV illness representation ( $p<0.01$ ). In women, the variables that remained associated with better mental health were higher CD4 cell count ( $p=0.02$ ), absence of past opportunistic infections ( $p<0.01$ ), absence of side effects ( $p=0.04$ ), higher scores in self-esteem ( $p<0.01$ ) and body image satisfaction ( $p<0.01$ ), and lower scores in HIV-related stress ( $p<0.00$ ), negative mood HIV-related ( $p<0.01$ ), and HIV illness representation ( $p<0.01$ ). (Table 5)

## DISCUSSION

In our study we hypothesized that men and women living with HIV infection would show differences in their HRQOL, and that women would report worse physical and mental HRQOL than men. According to our results, women exhibited more emotional distress and negative mood related to their HIV condition, were less satisfied with their body image, used less positive coping strategies and experienced more rejection and stigma than men, which coincides with previous findings (Gordillo et al., 2009; Pereira & Canavarro, 2011; Sherr et al., 2012; Tarakeshwar, Hansen, Kochman, & Sikkema, 2005; Turner, Laine, Cosler, & Hauck, 2003; Valverde et al., 2007; Wisniewski et al., 2005). Women also reported higher levels of pain, less energy and worse physical and mental health according to the MOS-HIV questionnaire.

We also hypothesized that the variables related to HRQOL would be different between genders. We confirmed our hypothesis, with the exception of lack of past opportunistic infections, which was related to better physical and mental health in both men and women, as well as not experiencing side effects for physical health and low levels of HIV-related stress and HIV-illness representation for mental health in both genders.

Regarding the variables that impacted the HRQOL differently, the frequency of injection drug use as a transmission route was significantly lower in women, and this variable was one of the aspects related to physical health only in men, as seen previously in another study developed in Spanish PLWHA (Pérez, Olry de Labry Lima, del Castillo, Bano, Ruz, & del Arco Jimenez, 2009). Thus, the deleterious effects of injecting drugs are prolonged in the time (Surah et al., 2013). As well, for men, being employed and not having economic worries were aspects that improved physical health. Economic worries are probably linked to difficulties in access to good general health care, like such as adequate diet and proper housing. On the

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contrary, internalized stigma was a factor related to better physical health in men. This finding was reported in a previous study by our team (Ballester-Arnal et al., 2016). As we mentioned then, internalized stigma could have an indirect influence upon the improvement in physical health through the group identity (in our study there is a high proportion of users or ex-users of intravenous drugs). Also, people who consider the stigma to be of greater importance could be those who take most care to try to conceal the signs of their disease and therefore avoid the social stigma. In fact, the adoption of a health behavior is associated with physical health in men.

On the contrary, for women the possible impact of the infection throughout the years and the presence of side effects affected directly physical health. Amongst women, more time living with HIV infection has been previously reported to be linked to lower physical and mental health (Pérez et al; 2009). Regarding side effects, a large number of them have been reported in women living with the HIV infection (Quatremère et al., 2017). Women seem also especially affected in their physical quality of life by the personal experience of rejection. As described before, women perceive these forms of social stigma as coming from multiple sources: their communities, interpersonal interactions, and within systems and structures (Rice et al; 2018). Interestingly, the personal experience of rejection affected the physical but not the mental health of these women. Hypothetically these women might be more reluctant to seek health guidance.

Regarding the differences in the variables related to mental health in both genders, it is interesting to observe that HIV illness representation was important for both men and women. It seems clear that a negative representation of the disease that leads the individual to contemplate the disease with fear may become an obstacle to living a full life. Illness perceptions can also influence the coping strategies used in response to HIV-related stressors (Norcini Pala & Steca, 2015).

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For men, the previous use of injecting drugs also was associated with worse mental health. Injecting drug use has been highlighted as a major contributor to the global burden of disease, both HIV and hepatitis C virus (Degenhardt et al., 2016), and can be associated with psychological and social risk factors such as mental problems and marginalization, among others. In men, counting on emotional (having a stable partner) and economic support (employment) were also factors associated with better mental health. They both may lead to better patterns of adjustment to the disease in men. In fact, gender stereotype, according to which some men still consider themselves the breadwinner (Kelan, 2008), and employment are associated with greater autonomy (Préau, Apostolidis, Francois, Raffi & Spire, 2007). Previous studies on roles and/or gender stereotypes highlight job-related aspects (e.g., the tendency to adopt patterns of instrumental action to solve problems and autonomy) as defining characteristics of men (Pratto & Walter, 2004). Therefore, the differences in the stereotypes associated with each gender could explain the differences perceived in these quality of life domains between men and women (Mrus, Williams, Tsevat, Cohn & Wu, 2005). Finally, for men, the adoption of a health behavior seems to improve both physical and mental health. Previous studies have linked physical exercise and better emotional status and quality of life (Nosrat, Whitworth & Ciccolo, 2017).

With regard to variables associated with mental health in women, self-esteem, which was reported to be low in our study, appears as a positive factor. Low self-esteem has been associated with depression in women living with HIV (Jagannath et al., 2011). Also, body image satisfaction was lower in women than in men despite being a positive factor as well. A negative body image has been related to emotional disturbances, such as sexual dysfunction (Luzi et al., 2009). Finally, HIV-related stress and a negative mood related to HIV are variables associated with mental health. Stress and depression not only affect mental health but also the immune system, including a decrease in CD4 cell count; which when higher was related to better mental health in women in our study (Mellado, 2007; Alciati et al; 2001; Alciati, Gallo, Monforte, Brambilla & Fumaz et al., 2012). Considering that low negative mood

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was also related to better physical health in men, interventions to improve these psychological parameters and revert the negative impact in the immune system (Gonzalez-Garcia et al; 2014) should be considered of special interest for PLWHA.

## Limitations

As in all research, this has some limitations and those that stand out are the cross-sectional nature of the study, the possible selection bias due to the voluntary participation, and the external validity of the data to extrapolate to other populations.

## Conclusion

Our study has identified the factors that play a positive or a negative role in the physical and mental health of men and women living with HIV in Spain. Understanding gender differences may provide vital information for the design of more effective interventions to improve quality of life of PLWHA.

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**DECLARATION OF INTEREST STATEMENT**

No potential conflict of interest was reported by the authors.

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