



LIFE SATISFACTION, DEPRESSIVE SYMPTOMS AND PERCEIVED SOCIAL SUPPORT IN HEART FAILURE PATIENTS

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Abstract: This research examined life satisfaction, depressive symptoms and perceived social support in two groups of adults ($N = 120$; age 40-89 years). The first was formed by stable heart failure (HF) outpatients and the second was a control group of similar age. Perceived social support was the only significant predictor of life satisfaction in the control group but, in the HF group, life satisfaction was associated with more social support and less depressive symptoms. Gender (men > women) was also an important predictor of life satisfaction in both groups, but more significantly in the HF one. All women reported more depressive symptoms and less life satisfaction than men. Female HF patients also perceived more social support than male patients did. Finally, a partial mediation of depressive symptoms in the association between social support and life satisfaction was found in the HF group.

Keywords: Life satisfaction; depressive symptoms; heart failure; perceived social support.

Satisfacción vital, síntomas depresivos y apoyo social percibido en pacientes con insuficiencia cardíaca

Resumen: En esta investigación se analizaron la satisfacción vital, los síntomas depresivos y el apoyo social percibido en dos grupos de adultos ($N = 120$; rango = 40-89 años), uno formado por pacientes no hospitalizados con insuficiencia cardíaca (IC) estable y otro control con personas de similar edad. El apoyo social percibido fue el único predictor significativo de la satisfacción vital en el grupo control, mientras que en el grupo con IC, se asociaba con más apoyo social y menos síntomas depresivos. El género fue también un predictor importante de la satisfacción vital (hombres > mujeres), aunque de forma más significativa en el grupo con IC. Todas las mujeres informaban más síntomas depresivos y menos satisfacción vital que los hombres. En el grupo IC, las mujeres también percibían más apoyo social que los varones. Finalmente, se encontró en este grupo que la asociación entre apoyo social y satisfacción vital estaba parcialmente mediada por los síntomas depresivos.

Palabras clave: Satisfacción vital; síntomas depresivos; insuficiencia cardíaca; apoyo social percibido.

INTRODUCTION

Heart failure (HF) is a worldwide growing health problem. Its prevalence in Europe is between 2 and 3% and rises sharply at 75, so the prevalence in 70- to 80-year-olds is between 10

and 20%. In younger age groups HF is more frequent in men because the most common cause, coronary heart disease, occurs earlier. Among the elderly, the prevalence is similar in both sexes. The overall prevalence of HF is increasing because of a growing ageing population, and the success in patient-survival rate for coronary events (Task Force on Heart Failure of the European Society of Cardiology, 2008).

HF is caused by impairment of the heart's ability to maintain normal blood circulation. Common symptoms include difficult and painful breathing even at rest, fluid retention and

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swelling of the lower extremities, as well as general weakness and fatigue (McCall, 1992). Patients with HF face significant impairment in functional status, multiple hospital admissions, high mortality rates, multiple physical and psychological symptoms, and a life expectancy shortened by between 8 to 12 years postdiagnosis (AHA, 2006).

HF was assessed in this study through the two parameters habitually considered in this chronic illness. On the one hand, the New York Heart Association criteria (NYHA), a single-item four-category classification system of physical function (The Criteria Committee of the New York Heart Association, 1964), which considers the two most common symptoms of HF, dyspnea and fatigue. This classification is an index of functional impairment from I (minimal impairment) to IV (maximal impairment). On the other hand, we also considered an index of cardiac function, the left ventricular ejection fraction (LVEF), or percentage of blood pumped out of the left ventricular chamber of the heart per beat. Normal LVEF ranges from 55-70%, while a LVEF below 40% may confirm a diagnosis of heart failure. Greater functional impairment and LVEF have been associated with diminished quality of life. However this association is not as robust as the pattern of relationships between quality of life and some psychological factors in HF patients (Carels, 2004).

Life satisfaction was considered in this study as a relevant index of quality of life (Garin et al., 2009). It is directly associated with the report of positive emotions and inversely associated with negative emotions (Kuppens, Realo, & Diener, 2008). In most studies of life satisfaction, participants are asked to judge their life globally, without any prior indication about which facets or life areas this judgment is based on. Thus, each respondent would take into account the aspects they considered the most relevant (Diener, 2000; Diener, Lucas, & Oishi, 2002).

Because of the severity and chronicity of HF disease, this condition is accompanied by high rates of depressive comorbidity (Allman, Berry, & Nassir, 2009), which can affect patients' life satisfaction. In a meta-analysis carried out by

Rutledge and colleagues (Rutledge, Reis, Linke, Greenberg, & Mills, 2006) the aggregated prevalence rate of depression in HF participants was 26.1% for men and 32.7% for women.

If significant depression is present in at least 20% of HF patients, up to 48% experience depressive symptoms, and women report a higher prevalence of them than do men (Gottlieb et al., 2004). Depressive symptoms have also been associated with the worsening of HF symptoms (Chen, Li, Shieh, Yin, & Chiou, 2010; Tang, Yu, & Yeh, 2010) and decreased quality of life (Carels, 2004; Cully, Phillips, Kunik, Stanley, & Deswal, 2010; Luijendijk et al., 2010), even after controlling for baseline health status (Rumsfeld et al., 2005).

Due to the prevalence of depression in HF patients and its association with negative health outcomes, it is important to understand the determinants of depression. One attention deserving factor is social support, which may play an important role in depression management for HF patients.

Social support is usually defined to include both the structure of an individual's social life (e.g. group memberships, existence of family ties) and the more explicit social support functions (e.g. instrumental, financial, informational, appraisal, or emotional support). The structure or quantity of social support has been defined as the number of people labelled by the individual as part of his or her social network. The quality or perceived functional support has been conceptualized as the subjective appraisal between the amount and type of support needed and amount and type of support available, or the perception that support would be available if needed (Lett et al., 2005).

A number of studies focusing on HF have documented the beneficial associations between social support and quality of life (Bennet et al., 2001; Clarke, Frasure-Smith, Lesperance, & Bourassa, 2000), depression and other aspects of psychological adjustment (Bekelman et al., 2007; Murberg, Bru, Aarsland, & Svebak, 1998; Park, Fenster, Suresh, & Bliss, 2006; Trivedi et al., 2009), self-care and treatment adherence (DiMatteo, 2004; Sayers, Riegel, Pawlowski, Coyne, & Samaha, 2008) and even mortality (Murberg, 2004).

Though past research suggests the beneficial effects of social support in HF patients, some studies have failed to find a negative association between social support and depressive symptoms (Paukert, LeMaire, & Cully, 2009), a positive association between social support and quality of life (Bennett, Baker, & Huster, 1998; Krethong, Jirapaet, Jitpanya, & Sloan, 2008; Volz et al., 2011), or a positive association with physical functioning (Shen et al., 2011). Some results point out that the beneficial effect from the support provided is especially significant in men (Krumholz et al., 1998); while some studies have found that the association between social support and quality of life was moderated by other factors such as the type of social support considered (Friedman & King, 1994). It is important to point out that some of these studies with negative associations between social support and well-being included patients who were hospitalized (Bennett et al., 1998), so these results must be replied with outpatients. More research is needed in this context to understand the relations between depressive symptoms and social support in HF outpatients.

Sex differences should also be considered since women have been found to report more psychological distress (Holahan, Moerkbak, & Suzuki, 2006; Martín et al., 2010) and less quality of life (Bennett et al., 2001; Chin and Goldman, 1998). Some findings suggest that women with cardiovascular illness experience more functional disability than do men, and have a poorer prognosis with respect to mortality, reduced activity, and persisting symptoms (Riedinger, Dracup, & Brecht, 2002). Among patients who have experienced a myocardial infarction, it has been found that women minimized the impact of the disease and did not want to bother others with their health problems, while men were more likely to involve their spouses in their recovery (Kristofferzon, Löfmark, & Carlsson, 2003) and to report more perceived potential support from their partners (Hildingh, Segesten, & Fridlund, 1997). The influence of interpersonal relationships on depressive symptoms in women, especially in the area of social support, is understudied.

Even though few studies have analyzed life satisfaction in this chronic disease, a positive association between perceived social support and life satisfaction has been found in female HF patients (Friedman & King, 1994). However, to our knowledge this research is the first study to assess how depressive symptoms and social support affect life satisfaction, contrasting women and men with HF disease and women and men free from heart disease.

This study was designed to provide a better understanding of the role of factors that contribute to life satisfaction in stable HF outpatients. Firstly, we analysed the differences in social support, depressive symptoms and life satisfaction between HF patients and the control group participants. We hypothesized that the HF patients would present more depressive symptoms than the control group, since the presence of depression is highly frequent in this disease characterized by a high physical impairment (Lossnitzer et al., 2009). We also expected these symptoms to result in a diminished perception of life satisfaction and underestimation for interpersonal support in HF patients, compared to control adults. This expectation was due to a higher need of family and extrafamily closeness and care (Sirri, Magelli, & Grand, 2011).

Secondly, we tested how depressive symptoms, social support and gender, considered together, affect the judgment of life satisfaction reported by the HF patients and the control participants. We expected to show that life satisfaction would be associated to high social support and less depression or emotional distress. We hypothesized that the level of depressive symptoms would be a more significant predictor of life satisfaction in HF patients (Cully et al., 2010) than in the control group. We also hypothesized that gender would be a significant predictor of life satisfaction since we expected the women to report more depressive symptoms (Gottlieb et al., 2004), less life satisfaction (Falcoz et al., 2006) and lower social support (Bennett et al., 2001) than the men participants.

Finally, we expected the relationship between social support and life satisfaction to

be mediated by the depressive symptoms reported. Thus, we attempted to analyse the extent to which this association could be explained through the effect of social support deployed by HF patients on depressive symptoms and, in turn, the effect of such symptoms on the life satisfaction finally reported by the patients.

METHOD

Participants and procedure

The study was approved by the Clinical Research Ethics Committee of the Hospital San Carlos in Madrid. All aspects of the study were conducted in compliance with procedures established by the Heart Failure Unit which belongs to the Hospital Cardiology Service.

One hundred twenty-five patients were screened for the study. Inclusion criteria were (1) age > 40 and < 89; (2) stable, documented HF (diagnosed between 5 and 10 years earlier); (3) NYHA functional class I-III; and (4) absence of clinical depression diagnosis or any other psychopathological disorder. Those patients who agreed to participate (100) received written information about the research project and a signed consent form. They were given a questionnaire to be completed at home and returned within 15 days with a postage-paid return envelope included after a post-hospital periodical check-up. Clinical information was taken from participants' medical records. Out of the sixty-eight that returned the questionnaire, eight patients were excluded due to missing questionnaire data. The remaining 32 did not return the questionnaire. No significant differences were found between responders and non-responders in demographic variables (age and gender) or clinical conditions.

The final HF sample was comprised of 60 patients (41 men, 19 women), with a mean age of 67.3 ($SD = 10.99$). Eighteen patients (30%) were at NYHA stage I (minimal impairment), 24 (40%) were at II (slight limitation of physical activity but no symptoms at rest), and the remaining 18 (30%) were at level III (high

impairment: marked limitation of physical activity but no symptoms at rest). On average, LVEF was 35.98% ($SD = 11.19$) which indicated moderate HF. Available data indicate that 61.7% of the patients had undergone cardiovascular surgery, and prevalence of diabetes and hypertension was 31.7% and 25% respectively. Although 80% of the patients had been hospitalized in the past for their HF symptomatology, all were outpatients at the time of research.

The control group was formed by 60 adults (35 men, 25 women). Forty participants work ($n = 12$; range 40-59 years) or attend ($n = 28$; range 60-89) a day-care centre for old people, and twenty (range 40-70) study in an adult learning centre. The procedure was also approved by the local Social Services Ethics Committee. Participants who agreed to collaborate received written information about the research project and a signed consent form. Inclusion criteria were (1) age > 40 and < 89, (2) absence of clinical depression diagnosis or any other psychopathological disorder, and (3) no coronary heart disease. They were given a questionnaire to be completed at home and returned to the centre within 15 days. Sixty per cent of the control group ($n = 36$) reported no chronic disease. The rest of the group ($n = 24$) reported illnesses kept under control by medication and healthy lifestyle like arthritis (12), cholesterol (6), or hypertension (6).

Measures

Depressive symptoms were assessed on the *Hospital Anxiety and Depression (HAD) Scale* (Zigmond & Snaith, 1983; Spanish version by Rueda, 2004). The 14-item questionnaire comprises two scales, one for *anxiety* (seven questions) and one for *depression* (seven questions) in non-psychiatric populations. All items were measured on a four-point scale from 1-4. Only the depression scale was applied in this study. Higher scores on the scale reflect greater depression.

Life satisfaction was assessed on the *Satisfaction with Life Scale* (Diener, Emmons, Larsen, & Griffin, 1985; Spanish version by Atienza,

Pons, Balaguer, & García-Merita, 2000). The 5-item scale asks the person for an overall evaluation of their life, rather than any specific domain. In this study, respondents are asked to rate the extent of their agreement to these items across a 6-point scale (0=not at all/5=extremely). Higher scores on the scale reflect greater life satisfaction.

Perceived social support was assessed on the *Social Support subscale* of the Quality of Life Questionnaire (Ruiz & Baca 1993). This scale includes nine items referring to the type of relationships established with family and friends as well as the level of satisfaction from received social aid and support. The extent of subjects' agreement with the items were registered on a 5-point scale (1=not at all / 5=extremely). Higher scores on the scale reflect greater satisfaction with social support received.

Statistical analysis

Statistical analyses were conducted with SPSS 19 for Windows. 2-tests were used to compare group differences on socio-demographic variables. Cronbach's alpha and Pearson's correlations were used to analyze the scales applied and their relationships. To test the main effects of the Group and Gender factors on life satisfaction, depressive symptoms and social support, a multivariate analysis of variance (MANOVA) was carried out. Wilk's Lambda was used as the criterion for significance, with alpha level set at 0.05. Multiple

regression analyses were conducted to determine the extent to which social support, depressive symptoms and gender predict life satisfaction reported by the HF patients and the control group. Prior to conducting the regression analyses, and in order to avoid potential problems with overlap between variables, multicollinearity tests were conducted. Finally, to test whether the level of depressive symptoms was a mediating variable linking social support to judgement of life satisfaction, procedures outlined by Baron and Kenny (1986) were followed.

RESULTS

Descriptive data

There were more participants living with a partner (65.8%); more with primary (54.2%) than secondary (20%) or university (25.8%) education levels, and more unemployed or retired (76%). No group differences were found in any of the sociodemographic characteristics such as age [$F_{(1, 118)} = 0.432, p = 0.51$], living with a partner [$\chi^2_{(1)} = 0.18, p = 0.25$], education level [$\chi^2_{(2)} = 1.08, p = 0.58$], or job status [$\chi^2_{(1)} = 2.23, p = 0.14$] (see Table 1). In the light of these data none of these factors were included in subsequent analyses. Alpha coefficients (see Table 2) revealed that the scales applied presented an adequate reliability level (between 0.70 and 0.73).

Table 1. Demographics and clinical data for the total sample, and for the heart failure (HF) and the control group

Variables	Total (N = 120)	HF (n = 60)	Control (n = 60)
Age [Mean (SD)]	66.65 (12.47)	67.30 (10.99)	65.8 (13.85)
Partnership [n (%)]			
Partner	79 (65.8)	43 (71.7)	36 (60)
No partner	41 (34.2)	17 (28.3)	24 (40)
Education [n (%)]			
< High school degree	65 (54.2)	30 (50)	35 (58.3)
High school graduate	24 (20)	14 (23.3)	10 (16.7)
University degree	31 (25.8)	16 (26.7)	15 (25)
Employment status [n (%)]			
Employed	29 (24)	11 (18.3)	18 (30)
Unemployed	91 (76)	49 (81.7)	42 (70)

Table 2. Correlations (heart failure group above the diagonal and control group under the diagonal) on the variables analyzed, alpha coefficients of the scales and descriptive data (mean and standard deviation, range in this sample and range of the scales) for the total sample ($N=120$)

Correlations	1	2	3
1. Life satisfaction	—	0.33**	-0.51***
2. Social support	0.31**	—	-0.25*
3. Depressive symptoms	-0.14	-0.14	—
Mean \pm SD	15.97 \pm 4.55	35.76 \pm 5.46	13.11 \pm 3.97
α	0.70	0.73	0.71
Reported range	0-25	17-45	7-26
Scale(s) range	0-25	9-45	7-28

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Differences between the HF and the control group

Pearson’s correlations (see Table 2) indicated that perceived social support was directly and significantly related to life satisfaction in both groups. However, the inverse correlations between depressive symptoms with life satisfaction and social support were only statistically significant in the HF group.

A MANOVA Group by Gender was carried out for life satisfaction, social support and depressive symptoms (see Table 3). The results showed that the three variables were not affected by Group factor [$Wilk’s \lambda = 0.97$; $F_{(3,114)} = 1.06$, $p = 0.37$]. Both groups were similar in life satisfaction, depressive symptoms, and perceived social support. However Gender was significant [$Wilk’s \lambda = 0.84$;

$F_{(3,114)} = 7.44$, $p < 0.001$, $\eta^2 p = 0.164$] with women reporting higher depressive symptoms [$F_{(1,119)} = 4.25$, $p < 0.05$, $\eta^2 p = 0.035$] and lower life satisfaction [$F_{(1,119)} = 7.69$, $p < 0.01$, $h^2 p = 0.062$] than men. The main effect obtained for social support [$F_{(1,119)} = 4.36$, $p < 0.05$, $\eta^2 p = 0.036$] (see Table 3) is best explained by the significant interaction Group x Gender obtained for this variable [$F_{(1,119)} = 7.77$, $p < 0.01$, $\eta^2 p = 0.063$]. More detailed analysis revealed that gender differences in social support were only significant in the HF group: female patients ($M = 38.26$; $SD = 3.14$) perceived higher social support than male patients ($M = 33.41$; $SD = 5.94$) [$F_{(1,59)} = 11.15$, $p < 0.001$, $\eta^2 p = 0.161$]; while the social support perceived was similar in the control group (Men = 36.86, $SD = 5.01$; Women = 36.16, $SD = 5.44$).

Table 3. Mean (and SD) on the variables analyzed in terms of group and gender

Variables	Group		Gender	
	HF patients ($n = 60$)	Control ($n = 60$)	Women ($n = 44$)	Men ($n = 76$)
Life satisfaction	15.52 (5.13)	16.42 (3.88)	14.57 ^a (4.87)	16.78 ^a (4.18)
Social support	34.95 (5.66)	36.57 (5.16)	37.07 ^b (4.67)	35.01 ^b (5.76)
Depressive symptoms	13.53 (4.56)	12.68 (3.26)	14.01 ^a (3.31)	12.59 ^a (4.24)

^a $p < 0.01$; ^b $p < 0.05$.

Note: Means with the same superscripts indicate that women and men (significantly) differed in the corresponding variable at the specified level.

Predictors of life satisfaction

In order to analyze the effect of social support and depressive symptoms on the judgment of life satisfaction reported, two multiple regression analyses were carried out, one for each group of participants (see Table 4). Gen-

der was also considered as predictor. Prior to conducting the regression analyses, multicollinearity tests were carried out. All the tolerance indices were greater than $1-R^2$ (specifically all > 0.66), and therefore none of the variables had to be removed or aggregated in the analyses.

In the HF group, obtaining a significant model that explained 34% of the variance, high social support and low presence of depressive symptoms were important factors that predicted higher life satisfaction. Gender also contributed to this model, women reporting lower life satisfaction than men. In the

control group, the significant model obtained explaining 11% of the variance revealed that social support was the only significant predictor of higher life satisfaction. Gender almost reached significance ($p < 0.07$), but depressive symptoms, in this group, did not at all ($\beta = -0.06$).

Table 4. Multiple regression analyses for the heart failure (HF) and the control group taking life satisfaction as the dependent variable

<i>Heart failure group</i>	B	SEB	β
Gender	-3.53	1.35	-0.32**
Perceived social support	0.34	0.11	0.37**
Depressive symptoms	-0.39	0.13	-0.35**
Model: Adjusted $R^2 = 0.34$; $F_{(3,56)} = 11.19$ ***			
<i>Control group</i>	B	SEB	β
Gender	-1.79	0.97	-0.23 ^o
Perceived social support	0.21	0.09	0.28*
Depressive symptoms	-0.07	0.15	-0.06
Model: Adjusted $R^2 = 0.11$; $F_{(3,56)} = 3.39$ *			

Note: Gender: 0 = male, 1 = female. ^o $p < 0.07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Finally, to analyze the possible mediator effect of depressive symptoms on the association between perceived social support and life satisfaction, we followed the procedure proposed by Baron and Kenny (1986), conducting a series of regression analyses to which gender was adjusted. The first step for testing mediation is to determine whether there are statistically significant associations between predictor, mediator and criterion variables. In this study, these associations were found in HF patients (see Table 2), so we could test this effect only for this group.

The mediator role of depressive symptoms would be revealed if, on the second step of the analysis (when independent and mediator variables are both entered as predictors in the regression), the beta corresponding to mediator was statistically significant and the beta corresponding to social support was lower than that

obtained on the first step, before introducing the mediator variable. A significant model of mediation was obtained (see Table 5), since beta for social support passed from 0.51 ($p < 0.001$) to 0.37 ($p < 0.01$), while the mediator was significant ($\beta = -0.35$; $p < 0.01$). We followed the procedure proposed by Holmbeck (2002) to determine the percentage of reduction of a bivariate relation when the mediator is included. In this analysis of mediation, 27% of the variance of the association between social support and life satisfaction is explained by depressive symptoms. The contribution of depressive symptoms to the social support-satisfaction relation would be partial, because social support continues to be significant after its inclusion in the model. Sobel's test confirmed that the association between social support and life satisfaction was partially mediated by depressive symptoms ($Z = 2.41$, $p < 0.05$).

Table 5. Analysis of depressive symptoms as mediator variable of the relation between social support and life satisfaction in heart failure group

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	β	<i>F</i>	<i>R</i> ²	<i>Criterion</i>
<i>Step 1</i>						
Social support	0.46	0.11	0.51***	10.84***	0.25	Life satisfaction
<i>Step 2</i>						
Social support	-0.32	0.11	-0.40**	5.98**	0.14	Depressive symptoms
<i>Step 3</i>						
Social support	0.34	0.11	0.37**	11.19***	0.34	Life satisfaction
Depressive symptoms	-0.39	0.13	-0.35**			

** $p < 0.01$; *** $p < 0.001$

DISCUSSION

Given the complicated nature of HF disease and its potentially debilitating impact on physical, emotional, and social functioning, studies have attempted to identify psychosocial factors that influence quality of life outcomes. Several reviews and meta-analyses have concluded that the presence of low social support and high depressive symptoms is associated with increased mortality and morbidity in HF patients (Murberg et al. 1998). However since some ambiguous data have been found, more research was needed in this context to understand the relations between depressive symptoms, social support and life satisfaction, from two perspectives: gender differences and a control group.

With this consideration in mind, the main research objective was to analyze the role of depressive symptoms and perceived social support in the prediction of life satisfaction reported by stable HF patients and by a control group free from this disease. Firstly, both groups were compared in these three variables, in order to test if they reported different levels. Contrary to what we had hypothesized, we found no significant main effects between HF patients and the control group in any of the variables: The intensity of life satisfaction judgment, the perception of social support, and the depressive symptoms reported.

Life satisfaction was measured by means of a scale to assess it globally (Diener et al. 1985), where people decide, subjectively, on which life areas to base their judgment. In this sense, it is difficult to foresee the potential changes or their

valence, because it has been confirmed that many people who undergo an illness report important positive changes in their life after the experience, expressing more appreciation for the truly important things in life and for interpersonal relations (Cordova, Cunningham, Carlson, & Andrykowski, 2001). In these cases, not only does life satisfaction not decrease but it actually increases. This idea can support the lack of differences between HF patients and the control group in life satisfaction in our study. The HF group had been suffering from this illness for a long time (at least, 5 years) and all the changes in pharmacological treatment and lifestyle were likely to have already been made, indicating that its global conception of life satisfaction may be similar to that reported by other people suffering from illnesses that require lifelong treatment and/or physical impairment due to age.

The perception of social support was also similar in both groups. HF patients and control participants were people ranging between 40 and 89 (63% over 60), all of them living at home. Because of the stability of important social relationships (e.g., family ties, spouse), the health effects of these relationships might be more evident in older individuals due to cumulative influences over an appreciable period of time (Hansson, Jones, & Fletcher, 1990). Future studies should confirm whether age increases the perception of social support and its protective role against psychological distress, and thus promotes quality of life.

Unexpectedly both groups experienced similar depressive symptoms. One possible expla-

nation may be that HF patients and control participants (24%) have been living with disease and receiving treatment over a long period of time. In addition, HF patients with NYHA criteria level IV, those most physically impaired, were excluded from this study. Therefore the level of depressive symptoms could be similar and more associated to age and chronic conditions than to a specific disease like the one analyzed in our study.

Although we found no differences between groups when analyzing these variables separately, we found differences in gender. The results obtained were fully consistent with the evidence in emotional distress and life satisfaction, with women presenting more depressive symptoms (Rutledge et al., 2006) and less satisfaction (Falcoz et al., 2006) than men. The higher levels of depressive symptoms observed in women, compared to men, suggests not only that women usually score higher on self-report measures, especially in emotional variables (Leach, Christensen, Mackinnon, Windsor, & Butterworth, 2008), but they may experience additional disease-specific or social stressors that could impact on their life satisfaction (Urizar & Sears 2006). Nevertheless, more research on this issue is required.

However, contrary to expected, women reported higher satisfaction with social support than men in the HF group; while this perception was similar between men and women in the control group. It is important to consider that this hypothesis was based on studies with the women and men either recently diagnosed with a myocardial infarction (Pérez-García, Ruiz, Sanjuán, & Rueda, 2011) or one year after this diagnosis (Kristofferzson et al., 2003). Nevertheless, our patients were women and men with stable HF diagnosed years before. The results obtained may be related to the idea that for many women, especially older ones, household duties and family responsibilities may be an opportunity and a basis for disease rehabilitation. Women often find themselves in the role of social support providers, more than social support receivers, which can lead them to overestimate their assessment of support. Future research should investigate gender differences in the relationships between social support,

emotional symptoms and life satisfaction at different disease follow-up periods and ages.

Secondly, we tried to delve into the factors that contribute to life satisfaction in the two groups considered. In the analysis of life satisfaction, perceived social support was the only significant predictor for the control group, explaining 11% of the variance. However, life satisfaction was predicted by social support and also by depressive symptoms in the HF group, explaining 34% of the variance. Even though HF patients reported a similar level of depressive symptoms to the control group, these symptoms may affect their global concept of life satisfaction more. In the control group, other variables not considered in our study (i.e. anxiety, coping) could be more relevant to explain life satisfaction.

Social support is a protective factor for all subjects, positively related to life satisfaction. Our result is consistent with previous data suggesting health-protective action by social resources (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Positively perceived social support is associated to benefits (Frasure-Smith et al., 2000; Penninx, Kriegsman, Van Eijk, Boeke, & Deeg, 1996) resulting in high life satisfaction (Everson-Rose & Lewis, 2005; Montero, Rueda, & Bermúdez, 2012; Pérez-García et al., 2011; Rueda & Pérez-García, 2006) during the course of chronic diseases. Gender was also a significant predictor; life satisfaction was more associated with male than with female patients. Women with HF have been found to experience worse functional status (Song, Moser, & Lennie, 2009) and less quality of life (Bennett et al., 2001; Chin & Goldman, 1998) than male patients. Our results point out that gender is an important factor to be considered in the development of interventions to help women with HF to live a satisfying and productive life (Plach, 2008).

Depressive symptoms played a highly significant role in the perceptions of life satisfaction in coronary heart disease (Sanjuán, Ruiz, & Pérez, 2011) and in HF patients, in particular (Cully et al., 2010). More specifically, our data indicated that depressive symptoms were a significant mediator in the association between social support and life satisfaction (explaining

27% of the variance of this association), or that social support significantly affects life satisfaction through depressive symptoms.

In HF patients social support acquires an even more significant role since it helps to alleviate this depressive mood and, in turn, to experience a similar life satisfaction to people free from this impairment illness. These results are consistent with previous data about the relationship between functional social support and lower depression in heart disease (Eriksen, 1994; Penninx et al., 1996). This suggests that these may be a fruitful intervention target in ameliorating social support, in reducing depression levels, and ultimately improving HF patients' life satisfaction and quality of life (Chen et al., 2010; Gary, Dumbbar, Higgins, Muselman, & Smith, 2010; Park et al., 2006).

Some limitations in this research should be pointed out. Firstly, study recommendations for potential interventions for HF patients are limited because of the cross-sectional nature of the data presented. Longitudinal data are required to explore whether perceived social support is predictive of the onset or worsening of depressive symptoms over time, or is a result of depression. The same could be argued about life satisfaction. Secondly, this study included a relatively small sample size. These issues of social support, depressive symptoms and life satisfaction need to be examined in further research that contrasts HF patients with other chronic patients undergoing equally disabling symptoms. And thirdly, functional or perceived social support has been considered in this research. It would also be of interest, in up-and-coming studies, to distinguish between various kinds of functional support (i.e. emotional, instrumental). This would allow more insight into the possible differential effects among the various considerations of social support on the prognosis of this disease (Barth, Schneider, & von Känel, 2010).

Despite these limitations, this study aids our understanding of the role that life satisfaction may play in the lives of those with a profoundly difficult progressive illness. Providing HF patients with adequate support for dealing with their illness may help to alleviate their depression and may also facilitate a more proactive

stance with regard to healthy lifestyles and adherence to clinical recommendations (Klein, Turvey, & Pies, 2007; Park et al., 2006), as mediational analysis (social support-depressive symptoms-life satisfaction) revealed. A more detailed monitoring of those patients with low social resources might be an important first step through to the improvement of life satisfaction and the adaptive adjustment to the disease. Finally, a gender perspective should be taken into account, since women reported higher depression and lower life satisfaction than men. Future research should study all these factors in depth and from a prospective approach in order to identify causal relations and to put some of the proposed suggestions into practice.

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