Validation of the AF-QoL, a disease-specific quality of life questionnaire for patients with atrial fibrillation

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Aims
To assess the performance of AF-QoL, a quality of life questionnaire for patients with atrial fibrillation (AF).

Methods and results
Observational, prospective, multicentre study in 29 Spanish centres. Three patients’ groups were identified at baseline visit: AF patients receiving a new therapeutic intervention according to physician criteria (intervention group); AF clinically stable patients according to physician evaluation (clinically stable group); and patients in a stable condition for more than 1 year after a myocardial infarction (control group). All patients were ≥18 years. Follow-up visit was at 1 month (clinically stable group) and 3 ± 1 months (intervention group). Sociodemographic and clinical information was gathered. AF-QoL, SF-36, and patient self-perception of general health status were administered. A total of 417 patients was included. Mean (SD) age was 61.2 (12.4), 31.4% women. AF-QoL mean overall score in AF patients (43.6) was lower (worse health-related quality of life, HRQoL) than in the control group (51.7) (P<0.05). At baseline, patients with higher frequency of symptoms (P<0.05) and worse NYHA functional class (P<0.01) reported lower AF-QoL scores. AF-QoL and SF-36 correlated in all of their domains (r=0.14–0.8, P<0.01). AF-QoL showed good internal consistency (0.92) and test–retest reliability (0.86).

Conclusion
AF-QoL is a valid and reliable HRQoL measure. Further investigation is recommended before using it in clinical practice.

Keywords
Atrial fibrillation • Health-related quality of life • Questionnaires • Validation

Introduction
Atrial fibrillation (AF) is the most common chronic arrhythmia encountered in clinical practice. It is estimated that 2.3–10 million individuals in the USA and 12 million in European Union have AF, and it is expected that this will increase along with the ageing of the population in developed countries.1,2

Atrial fibrillation has been associated with poor quality of life.3,4 Few interventions for AF have been shown to have an impact on mortality and morbidity, making the reduction of symptoms and the improvement in health-related quality of life (HRQoL) the main factors when choosing therapies.5

Even though some clinical variables, such as sinus rhythm have been identified as good predictors of the impact on HRQoL,6 many studies that assess the relationship between clinical outcomes of AF severity and HRQoL conclude that self-perception of AF patients does not depend on clinical variables, as they only explain a low percentage of the HRQoL total variability. Other factors such as treatment7,8 may also explain the variability. Within this context, it becomes necessary to devise disease-specific tools that are able to evaluate AF patients’ HRQoL in daily clinical practice, ensuring a global and complete approach.

In a recent publication reviewing the measurement of HRQoL in AF, at least 34 different QoL instruments were identified, suggesting a lack of consensus on a single optimal approach.9 In
addition, although a number of AF studies have used cardiac-specific questionnaires, only a few have been specifically designed for AF patients. The most commonly used disease-specific questionnaire is the Arrhythmia Symptom Checklist, which measures frequency and severity. This questionnaire was developed in late 1980s to evaluate the impact of cathether ablation and pacing technologies.\textsuperscript{10} The Symptom Checklist is straightforward to use, sensitive to change, and has been utilized in a high number of AF studies, but it has some limitations: the non-specific nature of a number of the symptoms and the lack of assessment of functional status or patient satisfaction. For this reason, some investigators have elected to construct their own symptoms scales.\textsuperscript{11,12} Published validation data for AF-specific scales are very limited.\textsuperscript{9}

A disease-specific HRQoL questionnaire (AF-QoL, quality of life questionnaire for patients with atrial fibrillation) was developed by the authors of the present study\textsuperscript{13} to measure HRQoL in patients with AF. The AF-QoL is an 18-item self-administered questionnaire with three domains: psychological, physical, and sexual activity.

The objective of the present study is to assess the measurement properties of the AF-QoL questionnaire in a real-life practice setting in patients with AF in Spain.

Methods

A clinical observational, prospective study was conducted in 29 centres in Spain from February to December 2007. The study population consisted of patients of both genders ≥18 years of age distributed in three groups as follows: AF patients receiving a new therapeutic intervention according to physician criteria (intervention group); AF clinically stable patients according to physician evaluation (clinically stable group); patients in a stable condition for more than 1 year after a myocardial infarction (control group). Inclusion in the study was done only after written informed consent and major limitations to self administration of the questionnaire were excluded. Patients with any other disease that could interfere with the study results according to the physician criteria, or taking part in a clinical trial were not included. Each investigator was expected to enrol 12 patients. The study protocol was approved by the Ethics Committee.

To assess the AF-QoL measurement properties, and according to the cardiologists scientific committee recommendations, the study visits were scheduled as follows: all patients were seen at baseline visit; in order to be able to measure the AF-QoL ability to detect changes in patients’ HRQoL, the patients in intervention group were seen at a follow-up visit at 3 ± 1 months; in order to check the reliability of the AF-QoL, those patients in the clinically stable group were seen at a follow visit after 1 month, which is the recommended time to ensure that there is no recall bias and that the patient does not perceive any change in the HRQoL. At baseline visit, data on sociodemographic characteristics (gender, age, educational level, and work status) as well as the date of AF or cardiac disease diagnosis and the main concomitant diseases were collected. At baseline and follow-up visit, the following clinical variables were collected for AF patients: AF classification (paroxysmal, persistent, or permanent), AF-related symptomatic episodes (classified as: palpitations, dizziness/syncope, chest discomfort, dyspnoea, and others), AF symptoms severity (mild, moderate, or severe), therapeutic strategy if any (rate control vs. rhythm control), NYHA functional class, and the most recent echocardiographic data only in those cases where the test was performed during the study period.

The AF-QoL, SF-36 questionnaires, and patients’ self-perceived health status (rated as ‘very good’, ‘good’, ‘fairly good’, ‘neither good nor bad’, ‘fairly bad’, ‘bad’, ‘very bad’) were administered at the same time at each visit.

AF-QoL questionnaire

The AF-QoL questionnaire (Appendix) is an 18-item questionnaire with three domains: psychological, physical, and sexual activity.\textsuperscript{13} The psychological domain includes seven items, the physical domain includes eight items, and the sexual activity domain includes three items. The questions refer to the previous month; answers are of five point Likert scale (‘totally agree’, ‘sufficiently agree’, ‘neither agree nor disagree’, ‘sufficiently disagree’, and ‘totally disagree’). All domains have been standardized for a scoring between 0 (worst HRQoL) and 100 (best HRQoL) in order to facilitate interpretation and comprehension. The AF-QoL questionnaire was self-administered. The nurses of the participating investigators were responsible for providing the AF-QoL to each patient, who filled in the questionnaire before each study visit.

Sample size and statistical analysis

The sample size to allow assessment of the psychometric properties of the AF-QoL was calculated based on responsiveness to change, the measurement property requiring higher sample size. In order to detect changes corresponding to 0.18 standard deviations (SD) in AF-QoL scores between baseline and follow-up at 3 ± 1 months, (small effect size, as described by Cohen et al.\textsuperscript{14}), with a level of significance of 0.05 and a statistical power of 0.80, assuming 15% of lost in follow-up, a minimum sample of 276 patients was required.

In addition, the size of the control group allowed for the detection of differences in AF-QoL scores in the control group compared with AF patients. A ratio of one control per three included patients was considered. In order to detect differences ≥0.35 SD, with a significance level of 0.05 and a statistical power of 0.80, a minimum sample of 99 controls was required.

A descriptive analysis of the sample sociodemographic and clinical characteristics was carried out. In order to assess the baseline homogeneity between study groups or AF types, a comparative analysis of the sociodemographic characteristics between patient groups and controls through Student’s t-test for the continuous variables (or its equivalents non-parametric Mann–Whitney U-test or Kruskal–Wallis) was performed. For categorical variables, the $\chi^2$ test was used.

For the AF-QoL validation, validity, reliability, and responsiveness were assessed. Feasibility was defined as the percentage of patients who answered the questionnaire in full and the time needed for it. Additionally, the ceiling effect and floor effect were calculated (percentage of patients who scored 100 or 0, respectively). The validity of the questionnaire was assessed in different ways. It may be expected that patients with more symptoms or more severe symptoms report more impaired HRQoL, therefore in order to compare the AF-QoL scores obtained between groups a linear regression model was used, which was adjusted by patients’ sociodemographic characteristics as well as comorbidities.

In order to evaluate the relationship between the obtained score of the AF-QoL and the obtained score of the SF-36 at baseline visit, a Spearman’s correlation coefficient was used. Additionally, the obtained AF-QoL score was compared with the patients self-perceived health status using the Kruskal–Wallis test.
Results

Sample description

A total of 417 patients were included, 257 receiving a new therapeutic intervention (61.6%), 84 clinically stable (20.1%), and 76 in the control group (18.2%). Mean age (SD) of AF patients [60.7 (12.4) years] was similar to the control group [63.5 (12.1) years] (P > 0.05). There was a statistically significant difference for gender, with higher proportion of males in the control group (82.9% vs. 65.4%) (Table 1).

At inclusion, the most prevalent symptom in AF patients was palpitations (77.6%), followed by dyspnoea (65.1%), dizziness–syncope (37.0%), chest discomfort (36.9%), and other symptoms (25.1%). At the end of the follow-up period, a statistically significant improvement was observed in the number and severity of the symptoms in both groups of AF patients (P < 0.01).

At inclusion, 44.5% of the patients who were receiving a new therapeutic intervention and 56.1% of the patients clinically stable were in NYHA Class I. In the intervention group, the percentage of patients in NYHA Class I increased from 44.5% at baseline visit to 63.4% at the follow-up visit, showing a statistically significant improvement. In the group of clinically stable patients, no significant changes were observed in the NYHA functional class between baseline and follow-up visit.

AF-QoL questionnaire

Feasibility

All the items of the questionnaire were filled out by 89.4% of the patients. The three items relating to sexual activity had a higher number of no response (between 5% and 6%), both for AF patients and for control patients. A ceiling effect (percentage of patients who scored 100) occurred in two patients (0.5%), and a floor effect (percentage of patients who scored 0) occurred in one patient (0.2%).

Table 1  Sociodemographic characteristics of the sample by study group

<table>
<thead>
<tr>
<th>Age (years),* mean (SD)</th>
<th>AF patients</th>
<th>Clinically stable group (n = 84)</th>
<th>Total (n = 341)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention group (n = 257)</td>
<td>59.8 (12.7)</td>
<td>63.5 (11.0)</td>
<td>60.7 (12.4)</td>
</tr>
<tr>
<td>Control patients (patients with previous myocardial infarction) (n = 76)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender,† n (%)</td>
<td>Man</td>
<td>171 (66.5)</td>
<td>52 (61.9)</td>
</tr>
<tr>
<td>Educational level,* n (%)</td>
<td>Without studies</td>
<td>28 (10.9)</td>
<td>4 (4.8)</td>
</tr>
<tr>
<td></td>
<td>Primary studies</td>
<td>116 (45.1)</td>
<td>44 (52.4)</td>
</tr>
<tr>
<td></td>
<td>Secondary studies</td>
<td>60 (23.3)</td>
<td>20 (23.8)</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>53 (20.6)</td>
<td>16 (19.0)</td>
</tr>
<tr>
<td>Work status, n (%)</td>
<td>Unemployed</td>
<td>5 (1.9)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Pensioner</td>
<td>76 (29.6)</td>
<td>40 (47.6)</td>
</tr>
<tr>
<td></td>
<td>Salary earner</td>
<td>120 (46.7)</td>
<td>24 (28.6)</td>
</tr>
<tr>
<td></td>
<td>Student</td>
<td>2 (0.8)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Housekeeping</td>
<td>35 (13.6)</td>
<td>15 (17.9)</td>
</tr>
<tr>
<td></td>
<td>Temporal invalidity</td>
<td>13 (5.1)</td>
<td>2 (2.4)</td>
</tr>
<tr>
<td></td>
<td>Permanent invalidity</td>
<td>6 (2.3)</td>
<td>3 (3.6)</td>
</tr>
<tr>
<td>Time on diagnosis (years),† mean (SD)</td>
<td>3.3 (4.8)</td>
<td>5.3 (5.4)</td>
<td>3.8 (5.0)</td>
</tr>
<tr>
<td>Concomitant diseases</td>
<td>Hypertension,* n (%)</td>
<td>134 (52.5)</td>
<td>41 (48.8)</td>
</tr>
<tr>
<td></td>
<td>Diabetes mellitus,† n (%)</td>
<td>27 (10.6)</td>
<td>12 (14.3)</td>
</tr>
<tr>
<td></td>
<td>Dyslipaemia,† n (%)</td>
<td>53 (20.8)</td>
<td>34 (40.5)</td>
</tr>
<tr>
<td></td>
<td>COPD,* n (%)</td>
<td>22 (8.6)</td>
<td>3 (3.6)</td>
</tr>
<tr>
<td></td>
<td>CVE,* n (%)</td>
<td>12 (4.7)</td>
<td>5 (6.0)</td>
</tr>
<tr>
<td>Number of concomitant diseases,† mean (SD)</td>
<td>1.2 (1.1)</td>
<td>1.3 (1.0)</td>
<td>1.2 (1.1)</td>
</tr>
</tbody>
</table>

COPD, chronic obstructive pulmonary disease; CVE, cardio/cerebrovascular events.

* P > 0.05 (ns).

† P < 0.01 (comparison between AF patients vs. control patients).
effect (percentage of patients who scored 0) occurred also in two patients (0.5%).

Median administration time (25–75th percentiles) for AF-QoL was 10 (5–15) min. No statistically significant differences were observed among AF and control group (P = 0.96).

Validity
For all the domains, baseline scores were lower in AF patients (43.6) than in the control group (51.7), showing statistically significant differences in psychological and physical domain (P > 0.05) and in the overall score (P < 0.01) (Figure 1), demonstrating good discriminant validity. When comparing all the study groups, the AF score at baseline visit, showed statistically significant differences between intervention group and clinically stable group as well as control group in all dimensions except sexual (P < 0.01).

Patients who presented any of the AF-related symptoms (palpitations, chest discomfort, dizziness, dyspnoea, or others) showed worse overall score on the AF-QoL questionnaire (P < 0.01). The worse AF-QoL scores on the psychological domain were shown in patients with palpitations (P < 0.01), chest discomfort (P < 0.01), or dyspnoea (P < 0.05). In the physical domain, worse HRQoL was reported by patients with dizziness, dyspnoea, chest discomfort, or other symptoms (P < 0.01). Regarding sexual activity domain, patients with dyspnoea (P < 0.01), chest discomfort (P < 0.01), and other symptoms (P = 0.04) also showed worse HRQoL than those patients without these symptoms. The number of symptoms that patients presented correlated significantly with the obtained score on each one of the AF-QoL domains (psychological domain r = 0.26, physical domain r = 0.38, sexual activity domain r = 0.19, and overall score r = 0.39, P < 0.01).

The AF-QoL scores were significantly higher, indicating better HRQoL, in those patients with a better functional class (P < 0.01 for all the domains), showing an overall mean (SD) score of 53.5 (22.1) points in patients with NYHA functional Class I; 37.4 (21.3) in Class II; 28.5 (18.2) in Class III; and 12.5 (6.1) points in patients in Class IV. The overall AF-QoL scores as well as the psychological and physical domains were significantly higher in those patients with a lower frequency of symptoms (P < 0.05), indicating better HRQoL.

Scores on the AF-QoL and SF-36 questionnaires at baseline visit correlated in all of their domains, observing between low and high correlation coefficients (r = 0.14 in SF-36 bodily pain vs. AF-QoL sexual activity and 0.80 in SF-36 physical functioning vs. AF-QoL physical domain, P < 0.01) (Table 2). Patient’s self-perceived health status was related with the obtained scores of the AF-QoL, showing lower scores (worse HRQoL) in those patients with worse health status (P < 0.01).

Table 2 Correlation between AF-QoL scores (0–100) of all patients included by domain and SF-36 scores at baseline visit

<table>
<thead>
<tr>
<th></th>
<th>Psychological domain</th>
<th>Physical domain</th>
<th>Sexual activity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SF-36 physical functioning</strong></td>
<td>CC 0.36</td>
<td>0.79</td>
<td>0.425</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>N 402</td>
<td>387</td>
<td>384</td>
<td>364</td>
</tr>
<tr>
<td><strong>SF-36 role physical</strong></td>
<td>CC 0.43</td>
<td>0.62</td>
<td>0.375</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>N 397</td>
<td>383</td>
<td>380</td>
<td>360</td>
</tr>
<tr>
<td><strong>SF-36 bodily pain</strong></td>
<td>CC 0.31</td>
<td>0.32</td>
<td>0.138</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>N 400</td>
<td>385</td>
<td>382</td>
<td>362</td>
</tr>
<tr>
<td><strong>SF-36 general health</strong></td>
<td>CC 0.56</td>
<td>0.58</td>
<td>0.378</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>N 402</td>
<td>385</td>
<td>382</td>
<td>364</td>
</tr>
<tr>
<td><strong>SF-36 vitality</strong></td>
<td>CC 0.48</td>
<td>0.65</td>
<td>0.315</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>N 399</td>
<td>384</td>
<td>382</td>
<td>362</td>
</tr>
<tr>
<td><strong>SF-36 social functioning</strong></td>
<td>CC 0.50</td>
<td>0.51</td>
<td>0.347</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>N 401</td>
<td>386</td>
<td>383</td>
<td>363</td>
</tr>
<tr>
<td><strong>SF-36 role emotional</strong></td>
<td>CC 0.51</td>
<td>0.42</td>
<td>0.303</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>N 397</td>
<td>382</td>
<td>379</td>
<td>359</td>
</tr>
<tr>
<td><strong>SF-36 mental health</strong></td>
<td>CC 0.59</td>
<td>0.49</td>
<td>0.317</td>
<td>0.57</td>
</tr>
<tr>
<td></td>
<td>N 399</td>
<td>384</td>
<td>381</td>
<td>362</td>
</tr>
</tbody>
</table>

CC, correlation coefficient. P < 0.01 in all cases.
Responsiveness

Table 3 shows the effect size in those patients receiving a new therapeutic intervention according to changes in patients’ self-perceived health status. Among patients who reported an improvement in their health status, AF-QoL effect size was of 1.05 (large effect size), with a mean (SD) change in the score of 17.4 (19.5) points. Effect size for those patients who reported no change in their health status was 0.24 (small effect size).

The MCID assessed as the mean change in the scores for those patients who reported a change in one category their health status, was 12.10, which is the minimum change that the patient detects as an improvement in its HRQoL.

The AF-QoL questionnaire had good internal consistency, with Cronbach’s α values of 0.92 for the overall score and higher than 0.80 in all the domains.

The mean (SD) difference in the overall AF-QoL score between baseline and after 1-month follow-up was of 1.76 (12.6) points. For the overall score of the AF-QoL questionnaire and for each of its domains, an internal consistency higher than 0.80 was obtained, demonstrating a good test–retest reliability.

Discussion

The results of the present study showed some preliminary evidence on the feasibility, validity, reliability, and responsiveness of the AF-QoL questionnaire, a disease-specific questionnaire for patients with AF. The AF-QoL questionnaire contains only 18 items and can be administered in a short period of time in conditions of real clinical practice.

The need to measure HRQoL in patients with AF has been widely mentioned in the literature, with an increasing interest in it during the last few years. Several factors have contributed to this growing interest: HRQoL is becoming central to the management decisions in chronic conditions and with our ageing population, where it might be the only factor differentiating treatment choices; the increasing participation of patients in therapeutic decisions, and finally, regulatory authorities are increasingly requesting QoL data as part of data for approval of new drugs. Within this context, the existence of a valid AF specific HRQoL questionnaire is very important for every day clinical practice as well as for use in clinical trials. In a recent publication, a group of experts in AF described a list of seven relevant outcome parameters to consider when assessing the benefits of new treatment options, and among them HRQoL was highlighted. The same panel of experts also emphasized the need to design and validate AF-specific instruments to assess AF-related HRQoL.

Some studies have measured HRQoL in cohorts of AF patients receiving different therapeutic approaches as in rhythm vs. frequency control strategies. Even though both cohorts of patients improved HRQoL, the authors could not find significant differences between treatment arms, as was evidenced in the AFFIRM study.

These results may reflect the general trend to improve QoL over time irrespective of the intervention, as in different strategies for frequency control studies or different strategies for rhythm control. Other possible reason for that lack of differences may be a low degree of sensitivity of generic questionnaires, most widely used, which reinforce the necessity of a specific tool to evaluate HRQoL of these patients.

Results of this study showed that baseline AF-QoL scores were lower in AF patients than in the control group (patients with previous myocardial infarction) in all the domains. In the previous studies, using other questionnaires such as the AF Symptoms Checklist, or the SF-36, the AF patients reported worse HRQoL than healthy controls but similar to patients with prior coronary events. In other words, those questionnaires did not discriminate between AF patients or patients with coronary disease. In our study, AF-QoL discriminated between AF patients and patients with prior myocardial infarction. Additionally, as expected, AF patients who had a higher percentage of clinical symptoms such as palpitations, chest discomfort, and dyspnoea had lower scores (reported worse HRQoL) in the AF-QoL questionnaire. These results demonstrate the discriminant validity of the AF-QoL questionnaire. Within this context is also important to remember that a patient with intermittent AF (whether paroxysmal or persistent) may be in sinus rhythm at the time of evaluation and completely asymptomatic, but the patient’s QoL and well-being can be severely affected by the disorder regardless the absence of symptoms at the moment of evaluation.

The validity of the AF-QoL questionnaire was also demonstrated by the fact that those AF patients with worse NYHA functional class at baseline reported lower scores (worse HRQoL) on the AF-QoL. These results are consistent with those of the CTAf investigators, where NYHA class was found to be an independent predictor of HRQoL score. Other authors have also tried to identify objective measures of disease that correlate with HRQoL. Dorian et al. identified that NYHA functional class and episodic frequency were directly related to patients’ HRQoL. In this case, the authors also analysed the impact of those disease measures (NYHA class and episode frequency) on the variability of scores and found that they accounted for only a 6% of the results (at baseline visit). It is worth mentioning the authors were using the SF-36 questionnaire. In our study, we did not measure the impact of each of the disease measures on the variability of the AF scores but, even though we are aware that clinical indicators are not always directly related to patients HRQoL, it is expected that a disease-specific AF questionnaire will be more able to discriminate...
to discriminate the different impact of each disease measure on patients' HRQoL.

When analysing the impact of the different symptoms on patients' HRQoL, results show that patients with chest discomfort and dyspnoea presented lower AF-QoL score in the psychological, physical, and sexual domain than those patients without these symptoms. In other words, these symptoms have a significant impact on the three dimensions of the questionnaire.

Results from our study showed that among those patients who improved their health status, the AF-QoL effect size was large, which means that the questionnaire is able to capture changes over time in patients' HRQoL.

There are some limitations in the study. The first limitation that could be highlighted is the lack of a control group of healthy patients. In this study, the rationale for not including healthy control group was because the authors assumed that the questionnaire should be able to discriminate between AF patients and patients with a similar pathology. In this case, patients with previous myocardial infarction were recommended by the experts as the most similar ones. Having a control group of patients with coronaryopathy allowed us to show the discriminant validity of the questionnaire vs. other very similar pathologies. Another important reason for not taking the healthy controls is the fact that AF-QoL is a disease-specific questionnaire and its administration to healthy population is not feasible. Previous studies that take healthy controls are measuring AF patients and dyspnoea presented lower AF-QoL score in the psychological, physical, and sexual domain than those patients without these symptoms.

In conclusion, this study shows the preliminary validity of the AF-QoL questionnaire for assessing HRQoL in patients with AF, and with further investigation, will become a recommended tool for clinical research and clinical practice.

Acknowledgements

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Appendix: AF-QoL questionnaire description (Literal English translation from the Spanish version)

**Psychological domain**

1. I have negative thinking about my future.
2. I get depressed when I feel tired.
3. I am afraid of having an unexpected tachycardia.
4. I get depressed when I think that my disease is for life.
5. I am afraid of pain or suffering a heart attack.
6. What affects more is the impotence that I feel when I have tachycardia.
7. I am afraid that my disease gets complicated.

**Physical domain**

1. When I do physical exercise (jogging, play tennis, swimming, etc.)
   I feel more tired than usual.
2. I have stopped doing physical exercise.
3. When I walk for half an hour I feel tired and I need to rest.
4. When I walk fast I feel tired.
5. I find it difficult to go out and to do any activity.
6. It affects me the inability to do things; I want but my body cannot.
7. My disease has decreased my quality of life.
Sexual activity domain
(1) I have had changes in my sexual activity due to the treatment.
(2) My sexual relations are less frequent.
(3) I am afraid that my heart goes off when I am having sexual relations.

Physical domain
(1) Before the disease was diagnosed I had more vitality.

References