FUNCTIONING AND WELL-BEING OF PATIENTS WITH TYPE 2 DIABETES OR ANGINA PECTORIS, COMPARED WITH THE GENERAL POPULATION

P.E. WÄNDELL (1), B. BRORSSON (2), H. ÅBERG (1)

SUMMARY - This study compares the health-related quality of life (HRQOL) of patients with type 2 diabetes mellitus or angina pectoris with that of a standard population sample (SPS). The HRQOL was assessed by the Swedish Health-Related Quality of Life Survey (SWED-QUAL), a generic HRQOL questionnaire adapted from the Medical Outcomes Study (MOS), with twelve scales tapping aspects of physical, mental, social and general health. Subjects between 45 and 84 years of age who answered the questionnaire were included, i.e. 266 patients with type 2 diabetes, 758 patients with mild angina pectoris (Canadian Classes I and II) and 908 with severe angina (Canadian Classes III and IV). As controls, we used 1126 subjects from the SPS. Patients with type 2 diabetes, mild angina and severe angina showed an increasing degree of health disturbance, compared with the SPS. Diabetic patients with no heart disease showed only a minor impact on the HRQOL, while the presence of a heart disease showed a considerable impact. In angina patients, the presence of diabetes also to some extent added to the decrease in HRQOL. On comparing the impact of the heart disease and diabetes on the HRQOL, the heart disease showed a stronger effect on most aspects of the HRQOL than diabetes. It is concluded that coronary heart disease is an important predictor of the impact on the HRQOL of type 2 diabetes patients.

Key-words: cross-sectional survey, quality of life, non-insulin-dependent diabetes mellitus, angina pectoris.

RéSUMÉ - Etat fonctionnel et bien-être de patients diabétiques de type 2 ou coronariens. Comparaison avec la population générale. Cette étude compare la qualité de vie en rapport avec la santé (HRQOL) de patients diabétiques de type 2 ou atteints d’angine de poitrine à celle d’un échantillon de la population générale (SPS). Le HRQOL a été mesuré par le Swedish Health-Related Quality of Life Survey (SWED-QUAL), un questionnaire générique adapté du Medical Outcomes Study (MOS), comportant douze échelles ciblant des aspects de la santé physique, mentale, sociale et générale. Cette étude a inclus des sujets âgés de 45 à 84 ans, soit 266 diabétiques de type 2, 758 patients avec angor modéré (Canadian Classes I et II) et 908 patients avec angor sévère (Canadian Classes III et IV). Les témoins étaient 1 126 sujets de la SPS. Les patients diabétiques et coronariens modérés et sévères présentaient un degré accru de perturbation de la santé par rapport aux témoins SPS. Les diabétiques sans cardiopathie ne présentaient qu’un impact mineur sur le HRQOL tandis que la présence d’une atteinte cardiaque avait un impact considérable. Chez les coronariens, la présence de diabète contribuait aussi à un certain point à la diminution du HRQOL. Lorsque l’on compare l’impact de l’atteinte cardiaque et du diabète sur le HRQOL, la cardiopathie s’est révélée avoir un effet plus marqué que le diabète sur la plupart des aspects du HRQOL. En conclusion, l’atteinte coronarienne est un important prédicteur de l’impact du diabète de type 2 sur le score HRQOL de qualité de vie.

Mots-clés : étude transversale, qualité de vie, diabète non insulinodépendant, angine de poitrine.
In recent years, there has been an increasing interest in outcome measures, in which studies of the quality of life or preferably the health-related quality of life (HRQOL) play an important role. As these measurements are based on the patients' functioning, they yield information complementary to the traditional medical measures.

Most measurements are performed on patient samples with separate medical conditions, while comparisons between different groups of chronic conditions have not yet been performed very often. We still lack knowledge about the relative impact of different chronic conditions on patients' functioning and well-being. Earlier studies have shown differences between various groups of chronic conditions, with each condition showing a unique profile and with significant effects on most measures of functioning and well-being for almost all the studied groups, compared with the general population [1, 2].

During the last ten years many studies regarding the HRQOL have been performed in patients with type 2 diabetes [3-12]. In general, patients with type 2 diabetes show an impact on the HRQOL, in comparisons with the general population, mainly due to vascular and non-vascular co-morbidity [7, 11-14]. Angina pectoris is a disease of special interest in relation to diabetes. Cardiovascular diseases, especially ischaemic heart disease, are more common among diabetic patients. Cardiovascular diseases are responsible for about half of all deaths in developed countries, and ischaemic heart disease is the prime cause of death amongst both men and women in Sweden. As the heart is held by most people to be the prime organ of life, a heart disease may affect both the physical and the emotional well-being [15-17].

The aim of this study was to compare the HRQOL of patients with diabetes or angina pectoris with that of subjects from a standard population sample, and also to compare the relative importance of diabetes in itself and cardiac disease regarding the impact on the HRQOL.

**MATERIALS AND METHODS**

Subjects

In the standard population sample (SPS) in 1995, the upper age limit was 84 years, and this was why we chose this age limit in our study. As only a minority of diabetes and angina patients were under 45 years of age, this was chosen as the lower age limit. From the SPS 1,126 subjects were included.

The diabetic subjects were enrolled from three community health centres (CHCs) in the Stockholm metropolitan area. The SWED-QUAL was sent out to 450 subjects, 150 from each CHC, and finally 439 were included. The questionnaire was answered by 302 subjects, i.e. 68.8%, of whom 280 were aged 45-84 years. Altogether 266 of these had type 2 diabetes, i.e. 95%, and were included in the study. There were no significant differences between respondents and non-respondents in socio-economic or disease-specific data [13].

The angina subjects were enrolled in a national prospective study of patients who were referred for coronary angiography [16]. We selected patients with chronic stable angina. The angina was classified according to the Canadian Cardiovascular Society (CCS), in which Class I was defined as when "ordinary physical activity does not cause angina", Class II as "slight limitation of normal activities", Class III as "marked limitation of normal activity", and Class IV as "inability to perform any physical activity without unpleasure, resting pain". Of the total of 1,666 subjects with chronic, stable angina, aged 45-84 years, 96 or 5.8% were classified as Class I, 662 or 39.7% as Class II, 882 or 52.9% as Class III, and 26 or 1.6% as Class IV. According to Dougherty et al. the mild cases, i.e. Canadian Classes I and II, amount to 86% of all angina cases [18]. We therefore chose to create two groups, 758 patients with mild angina, i.e. Classes I and II, and 908 patients with severe angina, i.e. Classes III and IV.

**Measures of quality of life**

The Swedish Health-Related Quality of Life Survey (SWED-QUAL) [19] is adapted from the Medical Outcomes Study (MOS) [20]. MOS instruments are generic HRQOL questionnaires presenting results as a health profile. They have been used since the 1980s, the most extensive being the 149-item questionnaire called the MOS Functioning and Well-Being Profile (MOSFWBP) [20], and the most used and best-known being the SF-36 and the SF-20. Both SF-36 [5, 6, 21, 22] and SF-20 [1, 2, 4, 9, 10] have been used for diabetic patients.

The SWED-QUAL consists of 66 items selected to represent the following aspects of the HRQOL: physical functioning, role functioning or activities of daily life (ADL), emotional well-being, pain, sleep, family functioning, sexual functioning, and general health perceptions. The questions regarding role functioning or daily activities are formulated as follows: “Would you now, please, think about those daily activities which you consider most important to you (e.g., housework or work outside the home, being a parent). How often have your normal activities been interfered with because of your physical health during the last week?” (i.e. the scale of physical role functioning). “To what extent have your normal activities been interfered with because of emotional problems during the last week?” (i.e. the scale of emotional role functioning) [19]. The results are presented as a HRQOL profile on 11 multi-item and two single-item scales. The scales are set up between 0 and 100 points, 0
The SWED-QUAL has been tested on a Swedish standard population sample of 2,500 individuals, as mentioned earlier. Cronbach’s alpha exceeded 0.78 for all scales, and all scales therefore satisfied the 0.70 reliability standard for group comparisons [19]. It has also been used for patients with type 1 or type 2 diabetes [13, 23], and patients with coronary artery disease [16].

Medical data

Data regarding patients with diabetes were extracted from medical records. Data regarding angina patients were available in protocols from the coronary angiography study [16].

Statistical methods

Comparisons concerning SWED-QUAL results were performed, using Student’s t-test with age- and sex-standardised values to the SPS. As multiple comparisons were performed, only levels of significance $p < 0.01$ and $p < 0.001$ should be considered. The differences are expressed in terms of effect size, where effect size is the difference between the two studied groups divided by the standard deviation in the SPS. An effect size of 1.00 is thus equivalent to a difference of one standard deviation. The effect size is a complement to the statistical significance and assesses the relative magnitude of a difference, where 0.20 is taken as small, 0.40 as moderate and 0.80 as large. A linear multiple regression analysis was performed on the diabetes and angina samples, using the HRQOL scales as the dependent factors, and age, sex, diabetes and heart disease as the independent ones.

Ethics

The study was approved by the Research Ethics Committee at Karolinska Institutet (nos. 91: 251 and 94: 334).

RESULTS

The SWED-QUAL results, standardized by age and sex to the SPS, are shown in Table I. Patients with type 2 diabetes, mild angina pectoris and severe angina pectoris showed a significantly lower HRQOL than the SPS with regard to most of the scales, with, in general, an increasing impact in that order.

There were no significant differences between respondents and non-respondents to the SWED-QUAL among patients with diabetes or angina pectoris.

The mean age of the different samples was as follows (with standard deviation within brackets): SPS 64.4 years (SD 8.5), type 2 diabetes 67.9 years (SD 9.8), mild angina 61.7 years (8.4) and severe angina 64.4 years (8.5). The rate of women were as follows: SPS 49.3%, type 2 diabetes 49.6%, mild angina 25.9% and severe angina 28.5%.

Among the diabetic patients, 32.6% showed diabetic retinopathy, 15.6% nephropathy, and 55.7% neuropathy. Most of these complications were mild and no subjects were blind or had uraemia, while 1.4% had painful neuropathy. Regarding macrovascular complications, 37.4% had a cardiac disease, 15.2% had suffered from a cerebrovascular disease and 10.9% from a peripheral vascular disease. Most of the macrovascular diseases were symptomatic. Regarding the cardiac complications, a total of 11.3% of all subjects had an earlier cardiac infarction, and 4.9% had undergone coronary by-pass operations or angioplasty. A non-vascular disease was present in 68.4%, with totally 48.5% showing a symptomatic disease. The treatment regimens were diet only in 20.7%, tablets in 51.9%, insulin in 17.3%, and tablets and insulin in combination in 10.2%.

Regarding the patients with mild angina, 43.5% had had an earlier cardiac infarction, 5.0% had undergone coronary angioplasty, 11.9% had diabetes, and 8.6% suffered from heart failure.

Regarding patients with severe angina, 43.8% had had an earlier cardiac infarction, 8.4% had undergone coronary angioplasty, 17.1% had diabetes, and 14.1% suffered from heart failure.

We also compared subgroups of type 2 diabetes patients regarding the presence or absence of heart disease, and angina patients regarding the presence or absence of diabetes, with the SPS (Table II). Type 2 diabetes patients with no heart disease showed only minor impacts on the HRQOL, while those with heart disease showed much more pronounced impacts. As regards angina patients, the presence of diabetes made a slight difference in patients with mild angina, but no difference in patients with severe angina.

Multiple linear regression was performed on the data for the diabetes and angina patients to estimate the relative importance of the diabetes and heart disease (Table III). On comparing the impacts of the presence of a cardiac disease and of diabetes, respectively, on the HRQOL (only $p$-values $< 0.01$ are considered), the presence of a cardiac disease showed an impact on more of the scales, i.e. on eight vs. on four, and also to a greater extent. Women showed lower results on eight of the scales. Age was a significant factor on seven of the scales, with a decreasing value on four and an increasing value on three, i.e. the two scales on emotional well-being and the scale on family functioning.
The main finding in the study was the great difference in the HRQOL in diabetic patients with or without a heart disease. Thus, the presence of diabetes per se showed only a minor impact on the HRQOL, compared with that of the general population, which was shown also by Næss et al. [7]. Rubin and Peyrot also drew the same conclusion in their review of HRQOL studies in diabetes [12].

One question concerns the possible influence on the results of the non-respondents, both in the general population and in the disease samples. In an earlier study non-respondents to the SWED-QUAL in the SPS interviewed by telephone seemed to have a slightly better HRQOL than the respondents [19]. Among the patients with diabetes or angina pectoris in this study there were no significant differences between respondents and non-respondents. Thus, it seems unlikely that non-respondents would have contributed otherwise than very marginally to the outcome of the HRQOL results.

Diabetes is a complex disease, covering many different aspects in its impact on health. It may extend from a non-symptomatic disease to a far advanced disease with serious micro- and macro-vascular complications. Beside these complications, other co-morbid conditions may be linked to diabetes, such as emotional [24] and musculoskeletal disturbances [25]. Actually, the differences in the HRQOL in patients with a disease are greater than the main differences between different diseases.

![Table 1: SWED-QUAL results (SD) for the SPS sample, and differences (with p level) between the SPS and other samples, as well as between disease samples (standardized by age and sex to the SPS). Significant values, i.e. p < 0.01, with corresponding effect sizes are given. Effect size is difference divided by standard deviation and estimates the size of the difference.](https://example.com/table1.png)

**DISCUSSION**

The main finding in the study was the great difference in the HRQOL in diabetic patients with or without a heart disease. Thus, the presence of diabetes per se showed only a minor impact on the HRQOL, compared with that of the general population, which was shown also by Næss et al. [7]. Rubin and Peyrot also drew the same conclusion in their review of HRQOL studies in diabetes [12].

One question concerns the possible influence on the results of the non-respondents, both in the general population and in the disease samples. In an earlier study non-respondents to the SWED-QUAL in the SPS interviewed by telephone seemed to have a slightly better HRQOL than the respondents [19]. Among the patients with diabetes or angina pectoris in this study there were no significant differences between respondents and non-respondents. Thus, it seems unlikely that non-respondents would have contributed otherwise than very marginally to the outcome of the HRQOL results.
MOS instruments, such as the SF-36 or the SF-20, the SWED-QUAL results are presented as a health profile, in contrast to other instruments using a single index. The SWED-QUAL covers broad aspects of functioning and well-being in order to reflect the impact of different chronic disorders.

We have shown earlier that the most important predictors of the decreased HRQOL in diabetes are the macrovascular complications and the non-vascular comorbidity [13]. One reflection is the low impact of the microvascular complications on the decreased HRQOL. Actually, the rate of severe microvascular complications in diabetes is approximately 30% [13].

**Table II.** SWED-QUAL results (SD) for the SPS sample, and differences (with p level) between the SPS and other samples (standardized by age and sex to the SPS). Differences are also given when comparing the different subgroups with each other. Owing to multiple comparisons only significant results $p < 0.01$ are shown. Effect size is difference divided by standard deviation and shows the magnitude of the difference.

<table>
<thead>
<tr>
<th>SWED-QUAL scale</th>
<th>SPS</th>
<th>A. Type 2 diabetes: no heart disease</th>
<th>B. Type 2 diabetes and heart disease</th>
<th>C. Mild angina: no diabetes</th>
<th>D. Mild angina and diabetes</th>
<th>E. Severe angina: no diabetes</th>
<th>F. Severe angina and diabetes</th>
<th>Differences between the different subgroups of the diseases: significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 1126</td>
<td>n = 168</td>
<td>n = 98</td>
<td>n = 667</td>
<td>n = 91</td>
<td>n = 742</td>
<td>n = 166</td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>80.7 (23.0)</td>
<td>– 6.8b****</td>
<td>– 16.3c****</td>
<td>– 4.9b****</td>
<td>– 11.7c****</td>
<td>– 18.3c****</td>
<td>– 23.0d****</td>
<td>A-B****, A-EcFc***, B-Ca**, C-DcF***, D-EbF***</td>
</tr>
<tr>
<td>Satisfaction with physical health</td>
<td>63.7 (30.4)</td>
<td>– 5.4</td>
<td>– 21.4c****</td>
<td>– 22.3c****</td>
<td>– 36.1d****</td>
<td>– 37.0d****</td>
<td>– 43.9d****</td>
<td>A-CcFdE***, B-DEx****, C-DcE****, D-Fb**, E-Fb***</td>
</tr>
<tr>
<td>Pain</td>
<td>77.0 (25.9)</td>
<td>– 3.2</td>
<td>– 9.3b****</td>
<td>– 9.1b****</td>
<td>– 14.8c****</td>
<td>– 23.1d****</td>
<td>– 24.5d****</td>
<td>A-BcEcF***, B-EcF***, C-DcEcF***, D-Fb**, E-Fb***</td>
</tr>
<tr>
<td>Positive affect</td>
<td>74.6 (23.6)</td>
<td>– 1.3</td>
<td>– 8.5b****</td>
<td>– 0.7</td>
<td>– 9.0b****</td>
<td>– 5.2b****</td>
<td>– 8.3b****</td>
<td>A-b**, B-Cb**, C-DcEcF***</td>
</tr>
<tr>
<td>Negative affect</td>
<td>68.0 (30.5)</td>
<td>– 3.8</td>
<td>– 12.7c****</td>
<td>– 10.4b****</td>
<td>– 17.8c****</td>
<td>– 11.2b****</td>
<td>– 11.3b****</td>
<td>A-D****, A-Eb***</td>
</tr>
<tr>
<td>Sleep problems</td>
<td>67.0 (28.1)</td>
<td>– 3.2</td>
<td>– 17.7c****</td>
<td>– 8.4b****</td>
<td>– 11.5c****</td>
<td>– 16.3c****</td>
<td>– 13.0c****</td>
<td>A-BcEcF***, A-Eb***, B-CcEcF***, C-Eb***</td>
</tr>
<tr>
<td>Cognitive functioning</td>
<td>67.1 (29.7)</td>
<td>– 2.8</td>
<td>– 1.5</td>
<td>+ 0.2</td>
<td>+ 0.9</td>
<td>– 5.1****</td>
<td>– 7.1b**</td>
<td>C-EcFb**</td>
</tr>
<tr>
<td>Physical role functioning</td>
<td>59.2 (34.2)</td>
<td>– 6.8</td>
<td>– 19.8c****</td>
<td>– 17.5c****</td>
<td>– 34.2d****</td>
<td>– 34.8d****</td>
<td>– 37.8d****</td>
<td>A-bcEcF***, A-DcEcF***, B-EcF***, C-DcEcF***</td>
</tr>
<tr>
<td>Emotional role functioning</td>
<td>67.2 (33.4)</td>
<td>– 10.3c****</td>
<td>– 21.4c****</td>
<td>– 15.5c****</td>
<td>– 24.9c****</td>
<td>– 32.0d****</td>
<td>– 34.5d****</td>
<td>A-D****, A-EcFc***, B-EcF***, C-DcEcF***</td>
</tr>
<tr>
<td>Family functioning</td>
<td>83.2 (23.1)</td>
<td>– 3.0</td>
<td>– 4.6</td>
<td>+ 1.5</td>
<td>– 3.0</td>
<td>– 0.3</td>
<td>– 2.4</td>
<td></td>
</tr>
<tr>
<td>Marital functioning</td>
<td>80.0 (22.0)</td>
<td>– 0.4</td>
<td>– 4.0</td>
<td>+ 4.4b****</td>
<td>– 1.3</td>
<td>+ 3.3**</td>
<td>+ 5.4b****</td>
<td>A-b**, B-CbF***</td>
</tr>
<tr>
<td>General health Perceptions</td>
<td>72.6 (25.6)</td>
<td>– 6.6b****</td>
<td>– 23.5c****</td>
<td>– 20.0c****</td>
<td>– 23.8d****</td>
<td>– 23.1d****</td>
<td>– 26.6d****</td>
<td>A-BcEcF***, C-EcF***, E-Fa**</td>
</tr>
</tbody>
</table>

Significance level: ** = $p < 0.01$, *** = $p < 0.001$; effect size: $a < 0.20$, $b > 0.20$ = small, $c > 0.40$ = moderate, $d > 0.80$ = great.
complications was very low, while the rate of macrovascular, symptomatic complications was high, which also corresponds well to findings in other parts of Sweden [28]. The high rate of macrovascular complications is not surprising, as most type 2 diabetic patients are old, i.e. above 65 years of age, when atheromatous complications are common. Thus, our findings are logical, but also emphasise the important role of the macrovascular complications among patients with type 2 diabetes.

Earlier studies comparing people with different disorders have generally found that diabetic subjects have a better HRQOL than those with most other chronic conditions, with the possible exception of hypertension [12]. These conditions include heart diseases, and subjects with angina pectoris have shown worse HRQOL than diabetic subjects, as in our study [1, 7]. With the great heterogeneity among diabetic patients in mind, these findings are not surprising.

The co-existence of different chronic conditions is also of great importance. Stewart et al. found that patients with multiple conditions show greater decrements in functioning and well-being than those with only one condition [1]. Even if diabetes per se resulted in only a minor decrease in the HRQOL, the combination of diabetes and a heart disease yielded a more pronounced effect on health than the heart disease in itself.

Quality of life has become an important aspect in chronic disease, not least in diabetes. According to the statement from the European Non-insulin-dependent Diabetes Policy Group in 1988, the treatment objectives for diabetes are “relief of symptoms, improvement of the quality of life, prevention of acute and chronic complications, avoidance of excess mortality, and treatment of accompanying disorders” [29]. When the main threats to the quality of life of subjects with type 2 diabetes are the macrovascular complications, of which the cardiac complications are the most important, efforts must be made to prevent them. However, this demands a multifactorial risk treatment, concentrating not only on the high blood glucose but also on the hypertension, hyperlipaemia and smoking habits, as all these are important risk factors in coronary artery disease [30]. A good diabetes care will save costs for society, owing to the prevention of complications, and will also help to preserve a good HRQOL in subjects with type 2 diabetes.

<table>
<thead>
<tr>
<th>SWED-QUAL scale</th>
<th>Intercept</th>
<th>Cardiac disease</th>
<th>Diabetes</th>
<th>Sex</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>123.937</td>
<td>– 14.444</td>
<td>0.017***</td>
<td>– 7.544</td>
<td>0.026***</td>
</tr>
<tr>
<td>Satisfaction with physical health</td>
<td>58.487</td>
<td>– 25.706</td>
<td>0.061***</td>
<td>– 0.448</td>
<td>0.050***</td>
</tr>
<tr>
<td>Pain</td>
<td>87.799</td>
<td>– 16.015</td>
<td>0.019***</td>
<td>– 0.448</td>
<td>0.050***</td>
</tr>
<tr>
<td>Positive affect</td>
<td>43.948</td>
<td>+ 0.407</td>
<td>0.023***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>54.969</td>
<td>– 7.237</td>
<td>0.004**</td>
<td>+ 0.289</td>
<td>0.007***</td>
</tr>
<tr>
<td>Sleep problems</td>
<td>80.848</td>
<td>– 13.646</td>
<td>0.010***</td>
<td>– 0.385</td>
<td>0.011***</td>
</tr>
<tr>
<td>Cognitive functioning</td>
<td>98.896</td>
<td>– 25.477</td>
<td>0.036***</td>
<td>– 0.334</td>
<td>0.010***</td>
</tr>
<tr>
<td>Physical role functioning</td>
<td>89.046</td>
<td>– 22.477</td>
<td>0.014***</td>
<td>– 0.385</td>
<td>0.011***</td>
</tr>
<tr>
<td>Emotional role functioning</td>
<td>89.790</td>
<td>– 15.628</td>
<td>0.036***</td>
<td>+ 0.446</td>
<td>0.024***</td>
</tr>
<tr>
<td>Family functioning</td>
<td>59.362</td>
<td>– 3.299</td>
<td>0.004**</td>
<td>– 0.352</td>
<td>0.006***</td>
</tr>
<tr>
<td>Marital functioning</td>
<td>87.882</td>
<td>– 2.979</td>
<td>0.005**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General health perceptions</td>
<td>77.701</td>
<td>– 17.985</td>
<td>0.043***</td>
<td>– 5.293</td>
<td>0.017***</td>
</tr>
</tbody>
</table>

**p < 0.01, ***p < 0.001
Acknowledgements – We wish to thank Drs. Jan Eggert and Henry Säsländer, GPs at the community health centres, for their assistance.

REFERENCES

18 Dougherty CM, Dewhurst T, Nichol WP, Spertus J. Comparison of three quality of life instruments in stable angina pectoris: Seattle Angina Questionnaire, Short Form Health Survey (SF-36), and Quality of Life Index-Cardiac Version III. J Clin Epidemiol, 1998, 51, 569-575.