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Health Related Quality of Life in Coronary Patients

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1. Introduction

The increase observed in the survival of patients with ischemic cardiopathy, together with the effect of the disease on the social, professional, and family life of those suffering from it, have led researchers to consider that the traditional ways of measuring morbidity and mortality are not adequate for assessing the potential benefits of health care interventions. For this reason, there is common agreement on the need to use an indicator of subjective assessment of health, and of health related quality of life (HRQL), as a complementary criterion for monitoring the results of medical interventions in these patients.

The term "quality of life" (QoL) or health related quality of life (HRQL) came into use during the 1970s as a multidimensional concept reflecting the overall subjective condition of the physical and mental welfare of the individual, which is a consequence not only of the disease but also of the family and social conditions forming the patient's environment.

The assessment of these patients' HRQL has been tackled by several authors using both disease-specific and generic instruments such as the Nottingham Health Profile, the Sickness Impact Profile, the SF-36 or the SF-12 health questionnaire. Both types of instrument have advantages and disadvantages, and they may provide additional information since they quantify the patient's overall health.

Using different multidimensional measures, poorer HRQL has been observed in patients with Acute Myocardial Infarction (AMI) and angina pectoris than in other populations, and these differences have been related to low social class, female sex, the presence of mental disorders and the severity of the clinical condition.

Measuring changes in the HRQL of coronary patients is also important as a way of assessing interventions and predicting needs for social care, because it has been shown that the focus of attention in the immediate period following a cardiac attack is generally the physical functioning, but following discharge from hospital and in the longer term, general health, vitality, social and emotional functions could be at least as important.

In this chapter, we aim to provide an overview of the concept of HRQL and the usefulness of this measure from the perspective of a coronary patient. Likewise, we intend to review the main instruments used to assess HRQL and we analyse the factors that have been seen to affect the quality of life of these patients.

2. Quality of Life and heart disease

2.1 The concept of Quality of Life and Health-Related Quality of Life

Quality of Life has generated interest for many years, and as early as 384-322 BC Aristotle noted "the good life" or "doing well" to be the same as "being happy". However, the advent of this concept as it is known today, and concern for its systematic and scientific assessment, is relatively recent. In the field of health sciences, one of the most important advances in recent decades has been to recognise that patients' perspective of their illness is just as legitimate and valid as that of healthcare professionals. This has led to the need to define the concept of Health Related Quality of Life (HRQL) and to its assessment as a way of subjectively measuring its effect on a disease. In addition, its treatment is considered with growing frequency as an indicator of the advances and innovations in healthcare services (Casas Anguita et al., 2001).

The most widely accepted definition of Quality of Life at the present time was proposed in 1994 by the World Health Organization (WHO); it is considered as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (Group, World Health Organization Quality of Life (WHOQOL), 1993). The term Health-Related Quality of Life (HRQL) emerged later to distinguish between QoL in its more general sense and the requirements of clinical medicine and clinical trials, and thus remove ambiguity. Shumaker et al. defined it as people´s subjective evaluations of the influences of their current health status, health care, and health promoting activities on their ability to achieve and maintain a level of overall functioning that allows them to pursue valued life goals and that is reflected in their general well-being. Although there is disagreement about which dimensions should be included in HRQL assessments, these authors have specified that the domains of functioning that are critical to HRQL include: social, physical and cognitive functioning; mobility and self-care; and emotional well-being (Shumaker & Berzon, 1995).

HRQL acts as a point of reference for measuring the effect of a disease on the individual, and is described and characterized by the patients themselves as the result of their appraisal of their health care (Urzúa M, 2010). One unifying and non-controversial theme throughout all the approaches is that this concept can only be assessed by subjective measures. It is precisely their subjective and multidisciplinary nature that has led to them being more widely used to complement the traditional physiological and biological measures of health status. However, their assessment requires instruments with suitable psychometric properties, something which must be taken into consideration before their implementation.

2.2 Assessing Quality of Life in coronary patients

One area of health care that has taken particular interest in the concept and measurement of Health-Related Quality of Life involves patients with coronary heart disease. This disease, besides being the main cause of death worldwide, has significant physical, emotional and social consequences for sufferers, so assessing their quality of life is not only necessary for assessing the success of a treatment or operation, but also for highlighting certain problems which are not assessed by traditional methods and that may be of use for modifying or improving the treatment given, or for providing alternatives that improve patients' clinical course (Fayers & Machin, 2007). Considering that the management of coronary artery

disease mainly involves leading a healthy life style, instruments for measuring HRQL are one of the best ways of providing an assessment of the experience of the patients themselves with regard to their health problems in areas such a physical, emotional or social functioning, role accomplishment, pain and fatigue (Asadi-Lari et al., 2003).

Despite the accepted interest in the assessment of HRQL in coronary patients, one of the main problems posed in clinical practice is the choice of the right instrument. When choosing a tool to assess HRQL, researchers or clinicians must first consider whether the chosen instrument has really been developed and validated in a population with similar characteristics, and if it covers all the aspects that it is important to assess in coronary patients.

To be used with confidence, the tools must have a series of characteristics such as: validity, or the degree to which it measures what it aims to measure; reliability, or the degree to which a measure provides similar values for people with the same quality of life; and sensitivity to change, or the degree to which a measure manages to detect significant changes appropriate to clinical changes (Cepeda-Valery et al., 2011). Furthermore, these tools must be complete; that is, they must include all the aspects that may be affected by the disease and they should be easy to score and interpret. This last aspect is of utmost importance in clinical settings as being quick and easy to use are necessary qualities under these circumstances (McDowell & Newell, 1996).

The most widely-used tools for measuring the HRQL of coronary patients can be grouped in two types: generic and specific (Table 1). Both kinds have pros and cons, and deciding which to use depends on the type of intervention to be assessed and the aims to be reached. In general, generic tools are able to detect the effects on the health of a broad range of patients and diseases and so comparisons can be established between the effect of heart disease and that of other chronic diseases such as diabetes or COPD on HRQL. However, generic measures are less sensitive at detecting the effect that the specific symptoms of heart disease have on a patient's life.

		Dimensions	Items
Generic	SF-36	8	36
	SF-12		12
	EroQol (EQ-5D)	5	16
Specific	Seattle Angina Questionnaire (SAQ)	5	19
	The Angina Pectoris Quality of Life Questionnaire (APQLQ)	4	22
	Myocardial Infarction Dimensional Assessment Scale (MIDAS)	7	35
	The MacNew Heart Disease Health-related Quality of Life instrument (MacNew)	3	27
	Cardiovascular Limitations and Symptoms Profile (CLASP)	9	37

Table 1. Health Related Quality of Life Instruments for Coronary Disease

The IQOLA project (International Quality of Life Assessment) (Alonso et al., 2004; Gandek et al., 1998), which studied the general population in eight countries, is one of the few projects to examine the impact of a series of chronic diseases, including coronary disease, on HRQL. In this project, which used the SF-36 health questionnaire to assess HRQL, it is

interesting to note how quality of life is affected in different ways depending on the chronic disease analysed. At the present time, the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) used in this project is the most valid instrument for measuring the quality of life of patients with coronary disease and its use has been proven in the clinical forms of both angina and myocardial infarction (Failde & Ramos, 2000). Likewise, it is an appropriate tool for use in patients who undergo heart surgery and as an evaluative measure in intervention programmes (Brown et al., 1999; Dougherty et al., 1998; Hawkes & Mortensen, 2006; Yu et al., 2003).

There are two versions of the SF-36 health questionnaire. Version 1, developed by Ware et al in the USA in 1992 (Ware et al., 1993) and version 2, revised and published by Ware himself (Ware, 2000). The latter, an improved version of the original, is made up of 36 items grouped into 8 dimensions: Physical Functioning (10 items), Social Functioning (2 items), Role-Physical (4 items) , Role-Emotional (3 items), Mental Health (5 items), Vitality (4 items), Bodily Pain (2 items), and General Health (6 items). For each of the 8 dimensions, the items are coded, aggregated and transformed to a scale ranging from 0 (the worst state of health for that dimension) to 100 (the best state of health). The instrument was not designed to produce of global index. However, it is possible to calculate two summary scores by combining the scores of each dimension: the physical and mental summary measures (PCS and MCS).

One of the short forms of this questionnaire, the SF-12, has also been shown to possess suitable psychometric properties for use in this field of medicine, and has been shown to have the advantage of being quicker to carry out while achieving the same results as the SF-36 (Failde et al., 2009). However, some studies carried out on patients after an acute myocardial infarction have found that the results of the SF-12 may not detect significant differences between the domains of QL affected by the disease, although this has been improved in version 2 of the questionnaire, in which it is possible to assess the same 8 dimensions included in the SF-36, and the summary dimensions (physical and mental). In patients with a recent myocardial infarction, the SF-36 has also been shown to be more sensitive at detecting improvements in HRQL after active intervention (Thompson & Yu, 2003).

Another of the most widely-used instruments for assessing HRQL is the EuroQol (EQ-5D). Like the SF-36, this questionnaire can be applied to a wide range of diseases. It provides a simple descriptive profile and a single index value for health status. The EQ-5D has three parts. The first enables the respondent to define their health status in accordance with the EQ-5D multi-attribute scale and is composed of 5 dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). Each of these has 3 levels of severity, where a higher score corresponds with a worse health status. The second part is a visual analogical scale ranging from 0 (worst health status imaginable) to 100 (best health status imaginable). The third part gathers other anonymous data to provide a demographic characterization of the group studied (Williams, 1990). This questionnaire has been validated among populations with heart disease and has been shown to possess good psychometric characteristics when compared with other previously-validated generic tools used with these populations (Ellis et al., 2005; Nowels et al., 2005).

In a recently published review it was revealed that the Stratification of EQ-5D index scores by disease severity decreased from a mean of 0.78 (SD 0.18) to 0.51 (SD 0.21) for mild to

severe disease in heart failure patients and from 0.80 (SD 0.05) to 0.45 (SD 0.22) for mild to severe disease in angina patients (Dyer et al., 2010).

Unlike the generic tools mentioned previously, specific instruments which have been developed for one particular disease assess the effect that the disease, in this case coronary artery disease, has on the different dimensions of HRQL. This improves their sensitivity at detecting the clinical changes in the symptoms that most frequently affect individuals. They are also less likely to have a floor or ceiling effect, with high percentages of patients with minimum or maximum scores in the survey not being observed. On the other hand, a drawback with regard to generic tools is that they do not allow for comparisons between groups of patients with different diseases (Thompson & Yu, 2003).

In the field of cardiology, several scales have been developed that are specifically designed to assess the HRQL of patients with angina, myocardial infarction or heart failure. Among the specific tools for assessing the HRQL of patients with angina, one of the most widely used is the Seattle Angina Questionnaire (SAQ) (Spertus et al., 1995). This questionnaire comprises 19 items that quantify 5 relevant clinical domains for coronary disease: physical limitations of the patient due to angina; angina frequency (assessing the frequency of symptoms and the use of medication); angina stability (measuring recent changes in symptoms); treatment satisfaction (assessing general satisfaction, and satisfaction with the treatment and the doctor's explanations); and disease perception (measures the effect of angina on quality of life). All the items use 5 or 6 point descriptive scales. The global score is calculated by adding the score of the items within each dimension and transforming them to a scale of 0 to 100, where the highest scores show better functioning (less physical limitations, less angina, and better quality of life). Regarding its psychometric properties, it appears to have good validity characteristics (Dougherty et al., 1998) and each domain and dimension of the SAQ has been independently validated, proving to be both reliable and sensitive to clinical changes. Furthermore, several studies show that the questionnaire correlates well with variables that influence the disease such as age and gender (Cepeda-Valery et al., 2011).

The Angina Pectoris Quality of Life Questionnaire (APQLQ) (Marquis et al., 1995a) developed in France is another specific instrument for use with coronary patients. It comprises 22 items grouped into 4 domains: physical activity, somatic symptoms, emotional distress, and life satisfaction. The correlations with the SF-36 dimensions were consistent with what was expected. Its reliability, concurrent and clinical validity allowed its use in clinical trials. The distribution of the scores of the APQLQ according to the clinical severity of Angina Pectoris (AP) was as hypothesized: the more severe the AP, the more impaired the Quality of Life (Marquis et al., 1995b).

As with patients with Angina Pectoris, it is important to assess the HRQL of patients who have suffered a myocardial infarction as it provides a holistic examination of the results of treatment and does not only focus on the physical component. A few years ago, a group from the UK developed and validated a specific instrument for this kind of patients (Thompson & Roebuck, 2001) which is commonly used nowadays. Known as the Myocardial Infarction Dimensional Assessment Scale (MIDAS), this tool comprises a 35-item self-administered questionnaire covering seven dimensions related to health status (physical activity, insecurity, emotional reaction, dependency, diet, concerns over medications and

side effects). The MIDAS showed excellent content validity, good criterion validity with good internal consistency, and sensitivity to change. Compared with other already validated questionnaires such as the SF-36, this tool showed a good correlation in most of the variables.

The MacNew Heart Disease Health-related Quality of Life instrument (MacNew) is a self-administered scale, a modified version of the original Quality of life after Myocardial Infarction Questionnaire (QLMI) (Oldridge et al., 1991). It is designed to assess the effect of coronary heart disease and its treatment (initially myocardial infarction, then extended to include angina pectoris) on everyday activities, and physical, emotional and social functioning. It comprises 27 items grouped into 3 dimensions: physical limitations, emotional functioning and social functioning. This new version of the instrument has good psychometric properties of validity, reliability and sensitivity to change, and is of proven use with patients after myocardial infarction. (Höfer et al., 2004).

Finally, it should be noted that it is sometimes difficult to establish an accurate diagnosis of coronary disease. It could begin with angina and proceed to a myocardial infarctus or heart failure. In these cases the Cardiovascular Limitations and Symptoms Profile (CLASP) can be extremely useful for assessing HRQL. The main advantage of this instrument is that it makes it possible to assess HRQL through different clinical situations, and is especially useful to check whether symptoms worsen or new ones develop. The CLASP, with 37 items grouped into 9 different dimensions (4 related to symptomatology and 5 with physical limations), can identify where there are difficulties for a patient, their importance, and the best treatment in each case. This instrument has been shown to be a reliable, valid and sensitive measure of health-related quality of life in patients with chronic stable angina (Lewin et al., 2002). However, further research is required before it can be recommended for routine use in clinical practice.

2.3 Factors related to Health Related Quality of Life in coronary patients

As mentioned above, quality of life measures have gained increasing attention as outcome variables in studies of cardiovascular disease in addition to the objective measures of cardiovascular status (Kaplan, 1988). Also, one main goal of coronary artery by-pass grafting (CABG) after a coronary event is to relieve angina and thereby to improve physical activity. This has consequences for work, leisure, mood, social, sexual activities, and also over quality of life (Duits et al., 1997).

Several studies carried out in coronary patients after CABG have shown some improvements in physical, social and sexual functioning (Stanton et al., 1984) as well as working status (Folks et al., 1986) 6 months after the intervention; and decreased anxiety, depression, fatigue, and sleep problems have been also reported at this time in this patients (Jenkins et al., 1983). On the other hand, some authors have found improvements in performance of everyday activities, mental state, and family life one year post-surgery (Mayou & Bryant, 1987) with general health status becoming very similar with those from a normal population (Caine et al., 1991).

Cross-sectional studies carried out in patients with angina and myocardial infarctus have shown that the SF-36 health questionnaire is a valid and reliable instrument for detecting differences between groups of coronary patients defined by age, gender, socio-economic

status, and clinical condition (Hemingway et al., 1997a, 1997b), and that it is a useful tool in patients with stable angina (Charlier et al., 1997; Permanyer-Miralda et al., 1991). Likewise, it has been demonstrated using this tool that coronary patients have worse HRQL than general population (Figure 1) (Soto Torres et al., 2004); also being female, being older, not being married, having a history of the disease and having a mental illness are factors affecting the QoL of these patients. Moreover, patients with unstable angina have been found to have a worse QoL than those who suffered an AMI (Soto et al., 2005).
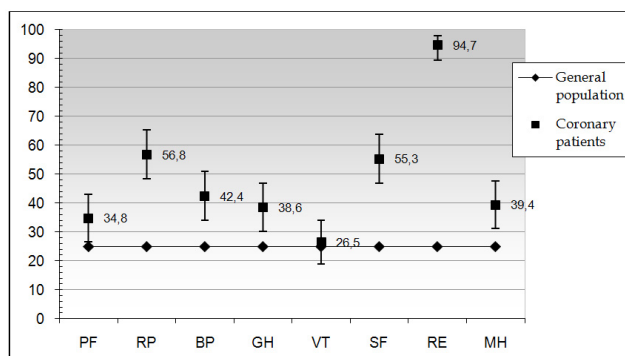

Fig. 1. Percentage of coronary patients below the 25th percentile of the general population, with the corresponding 95% confidence intervals. PF: Physical Functioning. RP: Role Physical . BP: Bodily Pain. GH: General Health. VT: Vitality. SF: Social Functioning. RE: Role Emotional. MH: Mental Health.

Despite this, and the fact that HRQL is a useful indicator of results in coronary patients who undergo revascularization, there are not many follow-up studies that analyse the evolution of HRQL and assess the effect of clinical and socio-demographic variables on the different clinical forms of the disease (angina vs myocardial infarction), even though it would be advisable to identify predictive factors to improve the development of interventions for subjects at risk (Bryant & Mayou, 1989).

Failde et al., in a study carried out in patients affected by both unstable angina and myocardial infarction (Failde & Soto, 2006), observed a significant decrease at 3 months of follow-up in the physical functioning, general health, and vitality dimensions, and the physical component summary (PCS) of the SF-36 health questionnaire. Also, the same authors have recently shown that HRQL is significantly impaired in coronary patients just after hospital discharge, with improvements being produced at 6 months, especially in the dimensions of the SF-36 related to bodily pain, general health, vitality, and the physical component summary (PCS) (Table 2) (data not yet published). In the same way, Höfer et al. (Höfer et al., 2006) also observed a significant positive change over time for the physical component summary dimension (PCS) of the SF-36, but not for the mental component summary dimension (MCS). However, other authors (Elliott et al., 2003; Mancuso et al., 2000; Wells et al., 1989) have shown that the SF-36 MCS is a good indicator of depression in general and diseased populations and Tavella et al. (Tavella et al., 2010) have even established a threshold score on the SF-36 MCS that would categorise a population with cardiac disease into depressed and non-depressed patients.

In the analysis of the factors affecting the change of HRQL in coronary patients Failde et al. observed that revascularization, age, and the interaction between a previous history of Coronary Heart Disease (CHD) and the presence of one or more risk factors affected negatively the physical component summary of the SF-36 at 3 months of follow-up (Failde & Soto, 2006). Also, studying the factors related to HRQL at 6 months, the same authors observed that depression, assessed by the 28-item General Health Questionnaire, a previous history of Coronary Heart Disease (CHD), or the associated comorbidity had a negative effect on quality of life, with a worse clinical course in these patients when compared with those without these conditions.

	BASELINE N=175		3 MONTHS N=80		6 MONTHS N=47		p	p[1]	p[2]	Partial eta-squared
	Mean	SD	Mean	SD	Mean	SD				
PF	61.9	28.9	66.9	27.9	63.4	30.0	0.67	0.41	1.00	0.004
RP	53.2	48.5	70.7	41.8	72.8	42.6	0.04	0.14	0.13	0.085
BP	56.6	29.1	60.5	27.4	67.5	25.6	0.01	0.89	0.02	0.148
GH	57.9	19.9	65.7	19.5	65.4	18.6	0.01	0.00	0.01	0.155
VT	59.7	30.7	69.7	27.4	68.3	26.7	0.04	0.09	0.13	0.084
SF	74.5	34.4	83.7	28.3	83.5	30.2	0.09	0.24	0.28	0.060
RE	76.6	39.8	80.1	39.1	84.4	36.0	0.27	1.00	0.82	0.026
MH	64.9	18.4	67.8	21.5	67.7	17.9	0.19	0.48	0.58	0.036
PCS	40.6	12.1	44.4	9.7	44.5	11.4	0.01	0.03	0.04	0.122
MCS	47.9	10.9	49.8	11.9	50.2	9.7	0.15	0.75	0.46	0.043

Table 2. Mean (SD) of SF-36 dimensions at baseline and during follow-up. PF: physical functioning; RP: role physical; BP: body pain; GH: general health. VT: vitality; SF: social functioning; RE: role emotional; MH: mental health; PCS: physical component summary; MCS: mental component summary. ANOVA test with the Bonferroni test for post hoc comparisons. p: comparison at three times; p[1]: comparison between baseline and 3 months; p[2]: comparison between baseline and 6 months. No significant differences were observed between 3 months and 6 months. Partial eta-squared: as an effect size estimator that describes the proportion of variability that exists in each dimension of the SF-36 during the follow-up. (0.01: Small; 0.06: Medium; 0.14: Large)

This results are in agreement with Ormel et al. (Ormel et al., 2007) and Höfer et al. (Höfer et al., 2005) who found that depression and anxiety are the most significant factors influencing HRQL in patients with heart disease, and with McBurney et al. (McBurney et al., 2002), who observed that the presence of other illnesses had a negative effect on the PCS-12 seven months after an AMI, and that having more comorbidity tends to lower HRQL in all dimensions.

Dickens et al. (Dickens et al., 2011) in a prospective cohort study conducted to investigate the impact of depression on subsequent HRQL in subjects with CHD, identified a number of cognitive targets for psychological interventions in these patients, namely a perceived tendency to avoid physical activity, increased somatic awareness, perceived symptom burden, and emotional impact of heart disease. In the Dickens´ study, when the results are controlled for demographic and medical variables, depression was associated with a

subsequent worse score in the physical component summary of the SF-36, but when anxiety, awareness of somatic symptoms, and negative illness perceptions were added to the regression model, depression no longer continued to be a significant independent factor. Maladaptive cardiac related health behaviour, like a high-fat diet, no regular exercise, being stressed or smoking, among others, were not related to the SF-36 physical component summary, so could not mediate the relationship between depression and the physical component summary (Baron & Kenny, 1986).

The associations between HRQL and patients' age, gender and whether or not they have undergone revascularization have been constantly studied, but the results are still inconclusive. Older age has been found to be associated with better postoperative mental health in these patients (Rumsfeld et al., 2004). However, Miller and Grindel (Miller & Grindel, 2001) reported that both preoperative health status and physiological, psychological and social recovery of older and younger patients were similar after CABG.

It has also been observed (Duenas et al., 2011) that being female negatively affects HRQL, and most studies suggest that women do not cope as well physically and psychosocially as men. However, it remains unclear why gender-related differences in HRQL exist among coronary patients (Van Jaarsveld et al., 2002).

Several authors have shown that women with coronary disease report significantly poorer physical functioning and mental health than men (Dixon et al., 2000; Ghali et al., 2002; Norris et al., 2004; Shumaker et al., 1997; Wiklund et al., 1993) and that this effect is mediated in some cases by its interaction with other variables such as a history of the illness or the mental health status. Norris et al. (Norris et al., 2007) also showed that, after adjusting for clinical and psychosocial covariables, the physical HRQL differences between men and women did not disappear. In addition, others authors have shown that smoking, regular alcohol consumption, and overweight are the most common risk factors for worse HRQL in men, while psychological distress, role pressure, and less strenuous exercise are more characteristic of women (Verbrugge, 1989).

Prior data suggest that women with cardiac disease are more likely than men to be confronted with continuing demands in the home environment, and may be more likely to neglect health care needs (Emery et al., 2004). Thus, Emery et al. hypothesized that quality of life would be more strongly associated with social support among women than among men.

Recently, a study analysing gender differences in the outcome of HRQL in coronary patients (Duenas et al., 2011), found that baseline scores in the SF-36 were lower among women. Also, the men had a better clinical course at 6 months in most of the physical dimensions, and social functioning. Meanwhile, the women only improved in the physical component summary, role physical and social functioning. This is partly in accordance with the results obtained by Emery and co-workers, (Emery et al., 2004) which show that men and women have increased scores in physical health over time, but women have significantly lower scores in physical dimensions across all assessments. Likewise, Duenas et al reported that the variables most strongly associated with an unfavourable evolution of HRQL in men were deterioration in mental health and angina frequency. Likewise, mental health was also a determining factor in the evolution of women's quality of life, although this was also affected by other variables, such as a clinical history of the disease, angina frequency and

undergoing revascularization during the follow-up (Duenas et al., 2011). In this respect, it is worth highlighting that revascularization was carried out earlier in the men, which may have conditioned the worse clinical course observed in the women, who suffered higher frequencies of angina and rehospitalisation during follow-up. Hemingway et al. (Hemingway et al., 2006) and Aguado-Romero and co-workers (Aguado-Romeo et al., 2006) detail the tendency to operate less on women with coronary disease than on men, although the latter try to justify these differences by referring to limitations in their data.

Thus, other factors, such as the perception that women have a lower pre-test probability of infarction, may influence the clinician´s discharge decision (Willingham & Kilpatrick, 2005) and the different attitude to treatment among women may be another determining factor.

On the other hand, several studies have found that the evolution of HRQL differs between men and women after coronary surgery. Phillips et al. (Phillips Bute et al., 2003) concluded that women do not obtain the same benefit from CABG surgery as men, and that the difference cannot be attributed to preoperative divergence. One possible explanation for this is that women´s compromised HRQL is less related to cardiac health than men´s, with other environmental and/or personality variables related to quality of life affecting women more than men (Phillips Bute et al., 2003).

Finally, another important factor related to the HRQL of patients with coronary disease is familial support (Rantanen et al., 2008). Patients who receive only limited support from significant others have been reported to suffer more anxiety and depressive symptoms than patients who receive more (Okkonen & Vanhanen, 2006) and patients have reported a better HRQL than their peers when they have received much social support (Bosworth et al., 2000; Woloshin et al., 1997; Yates, 1995).

Research results explaining the relationship between HRQL for CABG patients and social support have been contradictory, however, and social support received from family members and other significant others has shown no significant association with patients' functional capacity (Barry et al., 2006; Hamalainen et al., 2000). However, ready access to concrete support, does seem to correlate with positive changes in mental health (Barry et al., 2006).

3. Conclusion

HRQL is an essential primary outcome measure in coronary patients. Several instruments, both generic and specific, have proven to be of use for its assessment, showing differences between different groups of patients affected by the disease. In addition, several variables related to patients' clinical evolution and history of the disease have been shown to be related to HRQL, with worse results among women, subjects with previous history of CHD, and those with another comorbidity.

Mental health has been shown to significantly affect the evolution of HRQL in these patients. However, the systematic assessment of this variable is not common. Therefore, more emphasis needs to be placed on the systematic assessment of mental status specially in women, and the development of patient-oriented programs which reduce mental disturbances, and on providing increased social support for this at-risk population in particular.

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