

# Relationship between psychological profile and cardiological variables in chronic heart failure

## The role of patient subjectivity

G. Majani\*, A. Pierobon\*, A. Giardini\*, S. Callegari\*, C. Opasich†, F. Cobelli‡ and L. Tavazzi†

\*Psychology Service, ‡Heart Failure Unit, Cardiology Department, 'S. Maugeri' Foundation, IRCCS, Rehabilitation Institute of Montescano, Pavia, Italy; †Cardiology Department, S. Matteo Hospital, IRCCS, Pavia, Italy

**Aim** To analyse the relationships between the psychological profile, the satisfaction profile and cardiological variables in patients with chronic heart failure.

**Material and Methods** One hundred and fifty-two male patients with chronic heart failure in a stable clinical condition underwent cardiological evaluation and psychological assessment by means of two instruments: the Cognitive Behavioural Assessment 2.0 Battery and the Satisfaction Profile.

**Results** Patients scored higher than healthy subjects in terms of psychophysiological disorders and depression. Patients in NYHA class III reported higher anxiety and depression scores and had more frequent problems in daily life than patients in NYHA classes I and II. Class III patients also reported lower satisfaction levels in many aspects of psychological and physical functioning. Pulmonary resistances >2.5 Wood units, pulmonary capillary wedge pressure >0.18 mmHg and a diagnosis of ischaemic cardiomyopathy were associated with low satisfaction levels in the Satisfaction Profile 'physical functioning' factor. To be listed for heart transplantation and a history of more than three hospitalizations were related to low satisfaction

levels in many items of the Satisfaction Profile. Finally, stepwise multiple regression showed that NYHA class, depression score and pulmonary capillary resistance accounted for 32% of the variance in the Satisfaction Profile physical functioning factor score.

**Conclusion** On the basis of chronic heart failure diagnosis only, a generic pattern of psychological distress can be predicted, common to many severe chronic diseases. Shifting from objective mental health measures towards the domain of subjective satisfaction, the only link which emerges is between objective cardiological data and satisfaction with physical functioning. Satisfaction in terms of other life aspects does not seem to be related to cardiological variables. These results support the importance of subjectivity in health related quality of life, as well as objective measures.

(*Eur Heart J* 1999; 20: 1579–1586)

© 1999 The European Society of Cardiology

**Key Words:** Chronic heart failure, quality of life, satisfaction, psychological assessment.

See page 1529 for the Editorial comment on this article

## Introduction

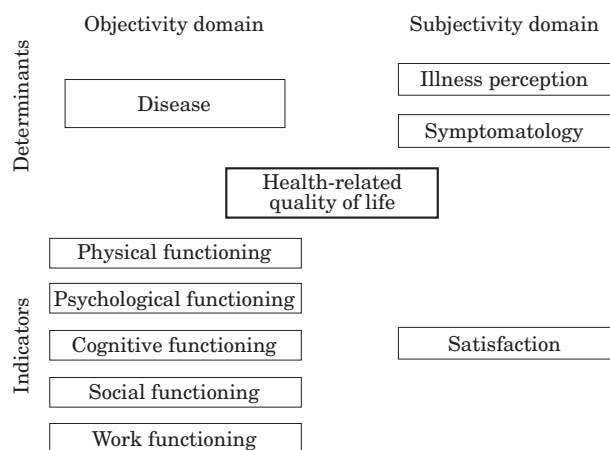
The psychological characteristics of patients with chronic heart failure have been examined by both psychological profile and health-related quality of life (HRQL) methods. The former method investigates the

patient's mental health and the latter concentrates on the impact the illness has on a patient's life, as judged by the patients themselves.

Several studies have shown that chronic heart failure patients suffer from moderate-to-severe depression or anxiety<sup>[1–4]</sup>, similar to patients with other chronic diseases<sup>[5–8]</sup>. Of the studies assessing patients' health-related quality of life, most deal with elderly patients or younger, pre- and post-transplantation patients. Mean aged patients with severe chronic heart failure, whether candidates or not for heart transplantation,

Revision submitted 27 April 1999, and accepted 28 April 1999.

*Correspondence:* Giuseppina Majani, Servizio di Psicologia, Fondazione 'S. Maugeri' Centro Medico di Montescano, 27040 Montescano (PV), Italy.



**Figure 1 Health Related Quality of Life theoretical model (22, p. 693, modified).**

are seldom considered from the psychological point of view<sup>[9–17]</sup>.

Furthermore, the relationship between psychological (as regards mental health and health-related quality of life) and cardiological variables has rarely been explored, and then only a few cardiological variables have been taken into account<sup>[1,18]</sup>, often with the comparison focusing on physical functioning as a measure of health-related quality of life<sup>[19–21]</sup>.

Undoubtedly these studies allowed us to obtain good analytical knowledge of the most important aspects of chronic heart failure, and offered very useful clinical suggestions as to how to deal with this population of patients. Nevertheless, during this continuous quest for knowledge, the patient's subjective perspective has received insufficient attention despite having, in our opinion, a fundamental role in explaining the complexity of the psychological aspects of chronic heart failure.

According to the simple conceptual framework adopted in clinical practice (Fig.1), patient satisfaction (taken as an expression of their own perception of life) is considered to be the only subjective indicator of health-related quality of life, whereas the psychological profile is defined as one of the functionality indicators in the domain of objectivity. In this domain, the patient is evaluated according to external and standardized criteria. In the domain of subjectivity, patients are the only judge of their well-being, according to their own criteria and priorities.

The aim of the present study is to analyse the relationships between psychological profile, satisfaction profile and cardiological variables in chronic heart failure patients.

## Methods

### *Patient sample*

All 542 chronic heart failure patients consecutively admitted to our medical Centre between August 1993

and December 1997 for assessment or reassessment of indications for heart transplant were considered eligible for the study. Exclusion criteria were: age >70, severe clinical condition (NYHA class IV), females (they constitute a small subgroup in our population), unperformable psychological assessment (due to cognitive or sensorial impairment, psychiatric disorders, refusal to be psychologically assessed), more than 30 days' interval between cardiological and psychological assessment, incomplete psychological assessment (due to low educational level), and hospitalization lasting more than 1 month before the psychological assessment (our health-related quality of life questionnaire refers to the 4 weeks immediately preceding admission to the centre). Figure 2 shows the flow chart illustrating patient recruitment.

Overall, 152 patients were considered to fulfil the criteria for inclusion in the study. Table 1 shows the patients' demographic characteristics and Table 2 their cardiological data.

### *Cardiological evaluation*

After therapy optimization, when patients were clinically stable, a functional evaluation was performed which included two-dimensional echocardiography, right heart catheterization, performed using a Swan-Ganz catheter for thermodilution introduced through the internal jugular vein (Seldinger technique); and cardiopulmonary testing carried out on a treadmill with a modified Naughton protocol and with simultaneous monitoring of respiratory gases by a CAD/NET System 2001 Medical Graphics analyser.

Contraindications to cardiopulmonary testing were symptomatic congestion at rest and the reappearance of rest symptoms after weaning from vasodilator or inotropic infusion treatment. Admission to the heart transplantation waiting list followed the current guidelines, absolute and relative contraindications were considered according to standard practice<sup>[23]</sup>.

### *Psychological instruments*

The Cognitive Behavioural Assessment 2.0<sup>[24]</sup> was used to assess psychological profiles. This is a battery of tests validated on Italian populations of healthy subjects and patients suffering from different diseases<sup>[25]</sup>. It allows evaluation of state and trait anxiety (STAI X1 and X2)<sup>[26]</sup>, personality characteristics (Eysenck Personality Questionnaire)<sup>[27]</sup>, psychophysiological disorders, fears and phobias, depressive behaviours, and obsessive compulsive disorders (Maudsley Obsessive-Compulsive Questionnaire)<sup>[28]</sup>.

Cognitive Behavioural Assessment 2.0 includes an anamnestic schedule (Schedule 4) which provides information about a patient's habits, personal history, sleep, eating behaviour, sexual activity, work, etc.

The Satisfaction Profile is an Italian questionnaire validated on populations of healthy subjects and patients with different chronic diseases<sup>[29–31]</sup>. It is a generic (not disease specific) instrument designed for assessing subjective satisfaction. It consists of 32 items concerning several aspects of daily life (ranging from

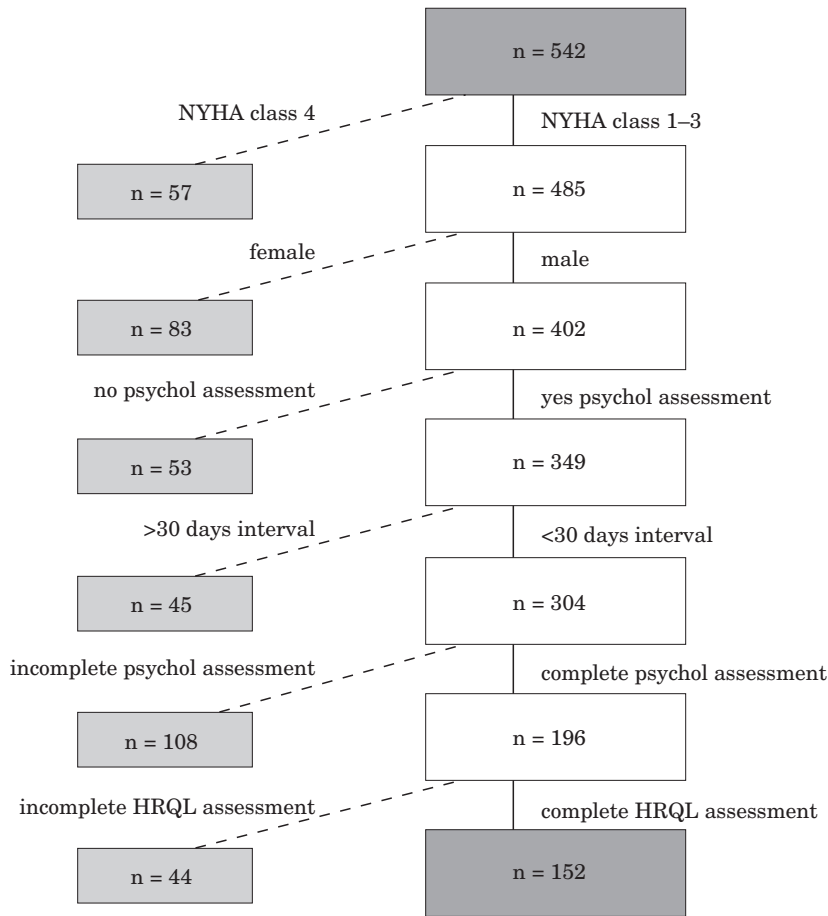


Figure 2 Patient recruitment.

sleep, eating behaviour, physical mobility, physical fatigue, to self control, mood, self confidence, etc.) and provides two types of profiles: an analytical one (from

the 32 items) and a synthetic one (from the five factors extracted: psychological functioning, physical functioning, work, sleep/eating/leisure, social functioning). In the Satisfaction Profile the patient is asked to evaluate, on 10 cm horizontal visual analogue scales, his/her satisfaction with the 32 life areas considered, with reference to the month before the hospitalization.

Table 1 Sample characteristics

	n=152	n (%)
Gender	M	
Age	50.47 ± 8.77	
range:	24-40	21 (13.8%)
	41-60	114 (75.0%)
	61-67	17 (11.2%)
Marital status	Single	56 (36.8%)
	Married	83 (54.6%)
	Widowed	3 (2.0%)
	Separated/divorced	10 (6.6%)
Years of school	0-5	36 (23.7%)
	6-8	55 (36.2%)
	9-13	50 (32.9%)
	More than 14	11 (7.2%)
Work status	Employed	64 (42.1%)
	Unemployed	4 (2.6%)
	Retired due to illness	36 (23.7%)
	Retired/disabled	46 (30.3%)
	Student	2 (1.3%)

Within the health-related quality of life framework described above, the Cognitive Behavioural Assessment 2.0 is a measure of psychological functioning, an indicator in the objectivity domain (i.e. an indicator of mental health); the Satisfaction Profile is a measure of satisfaction, an indicator in the subjectivity domain. It should be noted that in our study the difference between subjectivity and objectivity does not apply to the measurement modality, but to the nature of the variables to be measured: satisfaction is subjective since it does not have external normative criteria, whereas Cognitive Behavioural Assessment 2.0 variables (i.e. anxiety, depression, neuroticism, etc.) do have external normative criteria and can therefore be considered objectively.

The two questionnaires described above were administered as part of the routine psychological assessment, performed as soon as possible (on average after 2 weeks)

**Table 2** Patients' cardiological data

	n=152	%
Aetiology	Dilated cardiomyopathy	45.3
	Ischaemic disease	40.7
	Valvular disease	7.3
	Other	6.7
Waiting list for heart transplantation		36.2
Length of disease (years)	1	32.4
	2-3	31.1
	4-5	13.5
	≥6	23.0
Number of hospitalizations due to cardiological disease	0-2	79.2
	More than 3	20.8
NYHA	Class I	12.0
	Class II	47.3
	Class III	40.7
	Class IV	0
VO <sub>2</sub> peak (Weber's class)	(Weber A) VO <sub>2</sub> . Kg <sup>-1</sup> . min <sup>-2</sup> × >20	18.1
	(Weber B) VO <sub>2</sub> . Kg <sup>-1</sup> . min <sup>-2</sup> 15 < × ≤ 20	125.0
	(Weber C) VO <sub>2</sub> . Kg <sup>-1</sup> . min <sup>-2</sup> 10 < × ≤ 15	46.5
	(Weber D) VO <sub>2</sub> . Kg <sup>-1</sup> . min <sup>-2</sup> × ≤ 10	10.4
Left ventricular ejection fraction (%)	× ≤ 25	57.2
	25 < × ≤ 50	42.8
Pulmonary capillary wedge pressure (PCWP) (mmHg)	× ≤ 18	49.6
	× > 18	50.4
Right atrial pressure (mmHg)	× ≤ 8	83.5
	× > 8	16.5
Pulmonary resistance (Wood units)	× ≤ 2.5	64.5
	× > 2.5	35.5
Cardiac index (l . min <sup>-1</sup> . m <sup>2</sup> )	× ≤ 1.5	14.7
	1.5 < × ≤ 2.5	57.4
	× > 2.5	27.9
Atrial fibrillation		2.4
Previous cardiac arrest		5.9
Previous embolisms (pulmonary and peripheral)		2.6

after the patient had been admitted to our centre. All patients gave informed consent.

### Statistical analysis

For all the analyses performed, a *P* value <0.01 (two-tailed) was considered statistically significant. According to recent suggestions<sup>[32]</sup>, Bonferroni adjustments were not adopted. After a descriptive analysis of the sample's characteristics, five different statistical analyses were performed:

(1) comparison between Cognitive Behavioural Assessment 2.0 patients' and normative group scores (unpaired Student *t*-test). Due to the small sample size of patients in the first (*n*=21) and third (*n*=17) age classes (see Table 1), only a comparison concerning the second age class (41-60, *n*=114) was performed. Patient and normative groups were matched according to age and sex. (2) comparison between Cognitive Behavioural Assessment 2.0 scores and cardiological variables (ANCOVAs adjusted for age). The following cardiological variables were considered for the analysis: diagnosis (idiopathic or ischaemic), inclusion in heart transplant waiting list,

duration of illness, NYHA class, pulmonary capillary wedge pressure, right atrial pressure, pulmonary resistance, cardiac index, number of hospitalizations.

(3) frequency analysis of Cognitive Behavioural Assessment 2.0 Schedule 4 for cardiological variables (chi-square test or Fisher exact test);

(4) comparison between Satisfaction Profile scores and cardiological variables (ANCOVAs adjusted for age);

(5) multiple linear forward stepwise regression analysis with Satisfaction Profile selected factors as dependent variables and selected Cognitive Behavioural Assessment 2.0 scores and cardiological variables as covariates.

All analyses were performed with SPSS system 6.1 (Statistical Package for the Social Sciences, 1994).

### Results

(1) The comparison of the Cognitive Behavioural Assessment 2.0 scores from patients (second age class) and healthy subjects is shown in Table 3. Chronic heart failure patients had higher scores on psychophysiological disorders and depression scales and lower scores on the fear scale (total) and on the social fear subscale.

**Table 3 Comparison between patients' (second age class) and healthy subjects' CBA 2.0 scores**

CBA 2.0 Primary Scales	Inquiry area	Age: 41–60 (years)		P
		CHF patients n=114	Healthy subjects n=895	
STAI-X1	State anxiety	39.7 ± 11.5	38.2 ± 8.9	ns
STAI-X2	Trait anxiety	39.4 ± 11.0	38.9 ± 9.6	ns
EPQ/E-R	Introversion–extraversion	8.1 ± 3.2	7.4 ± 3.4	ns
EPQ/N-R	Neuroticism	4.3 ± 3.4	5.0 ± 3.4	ns
EPQ/P-R	Psychoticism	2.6 ± 1.3	2.4 ± 2.1	ns
EPQ/L-R	Lie	9.4 ± 2.1	8.8 ± 2.3	0.01
QPF/R	Psychophysiological disorders	46.5 ± 10.0	42.8 ± 8.2	0.0001
FSS/R	Fears and phobias	35.0 ± 32.0	58.9 ± 28.0	0.0001
FSS-1	Disasters	16.7 ± 8.8	16.2 ± 7.7	ns
FSS-2	Social anxiety	16.4 ± 10.1	20.1 ± 9.4	0.0001
FSS-3	Animals	5.7 ± 5.8	6.4 ± 5.8	ns
FSS-4	Agoraphobia	3.5 ± 4.2	3.8 ± 3.8	ns
FSS-5	Medical	6.0 ± 4.8	6.6 ± 4.4	ns
QD	Depressive behaviours	6.4 ± 4.5	4.1 ± 3.7	0.0001
MOCQ/R	Obsessions and compulsions	6.4 ± 4.1	6.9 ± 3.9	ns
MOCQ-1	Checking	3.2 ± 2.5	3.7 ± 2.4	ns
MOCQ-2	Cleaning	2.6 ± 1.6	2.7 ± 1.7	ns
MOCQ-3	Doubting, ruminating	0.9 ± 1.2	1.0 ± 1.2	ns

CBA=cognitive behavioural assessment; R=reduced form; STAI=state–trait anxiety inventory; EPQ=Eysenck Personality Questionnaire/ E=extraversion, N=neuroticism, P=psychoticism, L=Lie; QPF=psychophysiological questionnaire; FSS=fear survey schedule; QD=depression questionnaire; MOCQ=Maudsley Obsessive–Compulsive Questionnaire.

(2) NYHA class was associated with trait anxiety ( $F=6.7$ ,  $P=0.01$ ) and depression ( $F=6.4$ ,  $P=0.01$ ), patients in NYHA class 3 scoring higher than patients in NYHA class 1 and 2 considered together. Patients with a pulmonary wedge pressure >18 mmHg recorded lower scores overall ( $F=6.5$ ,  $P=0.01$ ) and in the subscale 'checking' ( $F=13.1$ ,  $P=0.0001$ ) of the Maudsley Obsessive–Compulsive Questionnaire, indicating the presence of compulsive behaviours.

(3) Table 4 lists the frequency distributions of the Cognitive Behavioural Assessment 2.0 Schedule 4 variables.

The statistical analysis confirmed a significant relationship between NYHA and sexual activity (chi-square=7.2,  $P=0.007$ ); aetiology and both work (chi-square=10.9,  $P=0.001$ ) and psychopharmacological treatment (chi-square=6.6,  $P=0.01$ ); number of hospitalizations and both work (chi-square=6.0,  $P=0.01$ ) and psychopharmacological treatment (chi-square=6.1,  $P=0.01$ ).

A qualitative analysis of contingency tables suggests that patients in NYHA class 3 report regular/satisfactory sexual activity less frequently than patients in NYHA classes 1 and 2. Patients with a diagnosis of idiopathic cardiomyopathy are more likely to be working and less likely to take up psychopharmacological treatment than patients with a diagnosis of ischaemic heart disease. Finally, patients with a higher rate of hospitalization are less likely to be working and patients with a lower rate of hospitalization are less likely to seek recourse to psychopharmacological treatment.

(4) Patients in NYHA classes 1 and 2 reported higher satisfaction levels in many Satisfaction Profile items, compared to patients in NYHA class 3. Figure 2 represents the two Satisfaction Profile profiles: each ray of the circle corresponds to one item. The profile is drawn by connecting the rays to each other. The wider the area

**Table 4 CBA 2.0 Schedule 4: answers frequencies distribution**

		n=152	n (%)
Couple relationship	Good	118	(84.9%)
	Poor	21	(15.1%)
Sexual activity	Regular/satisfactory	53	(35.8%)
	Not regular/unsatisfactory	95	(64.2%)
Sexual disturbances	No	60	(44.4%)
	Yes	75	(55.6%)
Work satisfaction	Yes	56	(82.4%)
	No	12	(17.6%)
Financial situation	Good	81	(54.0%)
	Poor	69	(46.0%)
Smoking	No	111	(73.0%)
	Yes	41	(27.0%)
Eating behaviour	Functional	49	(32.2%)
	Dysfunctional	103	(67.8%)
Sleep disorders	No	76	(50.7%)
	Yes	74	(49.3%)
Suicidal thoughts	No	129	(92.8%)
	Yes	10	(7.2%)
Psychopharmacological treatment	No	109	(75.7%)
	Yes	35	(24.3%)



within the profile, the higher the satisfaction. The items in which a significant difference was found are the following: mood, self confidence, problem solving ability (belonging to the factor psychological functioning), resistance to physical fatigue, physical well being, physical appearance, physical mobility, level of physical activity, frequency of sexual intercourse, quality of sexual intercourse, resistance to stress, leisure activities (i.e. the whole factor physical functioning); amount of sleep and quality of sleep (belonging to the factor sleep/food/leisure). In Fig. 2 only the factors names are indicated.

Patients with pulmonary resistances  $>2.5$  Wood units reported lower scores on the physical functioning Satisfaction Profile factor and on the item resistance to physical fatigue, belonging to the same factor ( $F=7.77$ ,  $P=0.006$ ;  $F=7.17$ ,  $P=0.008$ ). Patients with a pulmonary capillary wedge pressure  $>0.18$  mmHg reported lower scores on the physical functioning Satisfaction Profile factor ( $F=7.81$ ,  $P=0.006$ ). Patients listed for heart transplantation reported lower scores in the physical functioning factor ( $F=30.81$ ,  $P=0.0001$ ) and in the following Satisfaction Profile items belonging to the same factor: resistance to physical fatigue ( $F=24.25$ ,  $P=0.0001$ ); physical well-being ( $F=22.82$ ,  $P=0.0001$ ); physical mobility ( $F=15.08$ ,  $P=0.0001$ ); level of physical activity ( $F=16.25$ ,  $P=0.0001$ ); frequency of sexual intercourse ( $F=14.63$ ;  $P=0.0001$ ); quality of sexual intercourse ( $F=10.96$ ,  $P=0.001$ ); leisure activities ( $F=6.59$ ,  $P=0.01$ ).

They also reported lower scores in the sleep/eating/leisure factor ( $F=11.13$ ,  $P=0.001$ ) and in the following Satisfaction Profile items belonging to the same factor: amount of sleep ( $F=13.75$ ,  $P=0.0001$ ) and quality of sleep ( $F=12.87$ ,  $P=0.0001$ ). Patients with more than three hospitalizations reported lower scores in the physical functioning factor ( $F=10.30$ ,  $P=0.002$ ) and in the following Satisfaction Profile items belonging to the same factor: resistance to physical fatigue ( $F=8.12$ ,  $P=0.005$ ), physical well-being ( $F=12.72$ ,  $P=0.0001$ ) and level of physical activity ( $F=11.70$ ,  $P=0.001$ ). Patients with a diagnosis of ischaemic cardiomyopathy reported lower scores in the physical functioning factor ( $F=6.73$ ,  $P=0.01$ ) and in two Satisfaction Profile items belonging to the same factor: physical appearance ( $F=12.02$ ,  $P=0.001$ ) and resistance to stress ( $F=6.27$ ,  $P=0.01$ ).

(5) Stepwise multiple regression was performed, with physical functioning Satisfaction Profile factor as the dependent variable and the following covariates: age, depression score (depressive behaviours of Cognitive Behavioural Assessment 2.0) and those cardiological variables which were significantly connected to psychological variables: pulmonary resistance, pulmonary capillary resistance (continuous variables), listed/not listed for heart transplantation, NYHA class, number of hospitalizations (dummy variables).

NYHA class, depressive behaviours and pulmonary capillary resistance accounted for 32% of the variance, with NYHA class being the first variable to enter the equation (adjusted  $R^2=0.20$ ,  $P<0.00001$ ), followed by

depressive behaviours (adjusted  $R^2=0.27$ ,  $P=0.0004$ ) and pulmonary capillary resistance (adjusted  $R^2=0.32$ ,  $P=0.0025$ ).

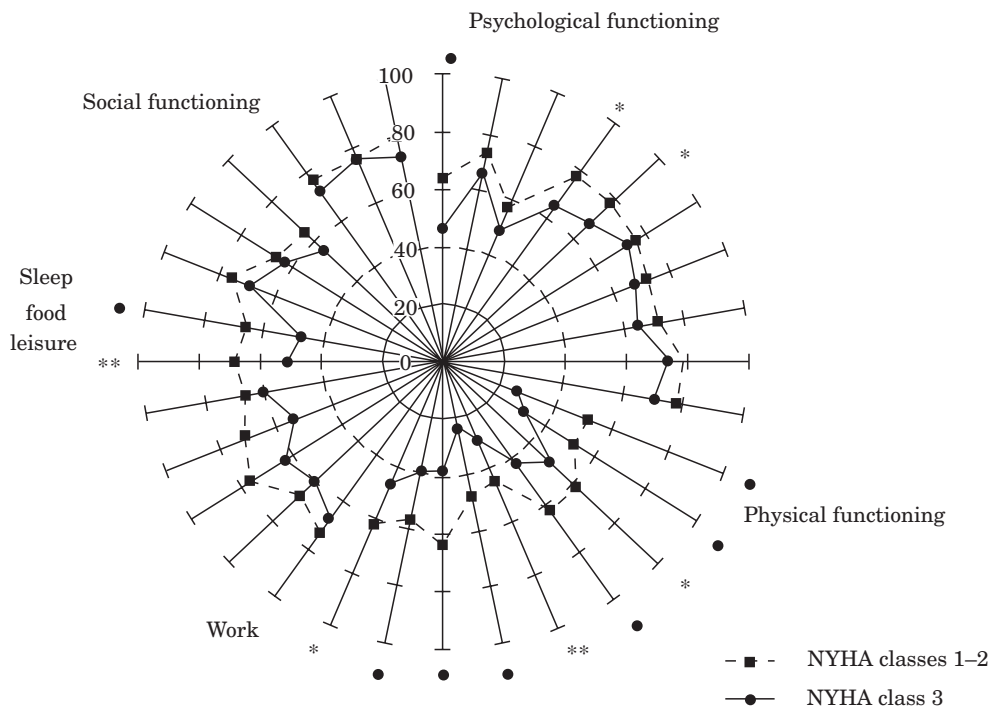
## Discussion

The present study has one obvious limitation inherent to the process of recruiting patients: the final sample cannot be considered properly representative of the whole chronic heart failure population: only a small proportion of patients fulfilled the criteria for the inclusion into the study. This, however, occurs in many studies on clinical samples when they concern patients with severe chronic conditions. Furthermore, in our study, patients were required to fulfil both cardiological and psychological criteria in order to be enrolled, thus further restricting the number of eligible subjects. On the other hand, this close cooperation is an important part of the study, and some interesting results deserve to be highlighted.

On a general level, chronic heart failure patients suffer from more mood disturbances than healthy subjects. Their psychological distress is confirmed by results of the Cognitive Behavioural Assessment 2.0 Schedule 4, which brings to light the frequent presence of sleep disturbance, financial difficulties, dysfunctional eating behaviours, decrease in sexual activity and sexual dysfunction. In addition, smoking, suicidal thoughts and psychopharmacological therapy use are reported. On the other hand, patients often define their 'couple' relationships as good, as confirmed by previous studies<sup>[33,34]</sup>. It is interesting that patients scored lower than healthy subjects in the subscale social phobia. Second, patients with a pulmonary capillary wedge pressure  $>18$  mmHg scored lower on the obsessive-compulsive scale. Since these data have not been reported previously in the literature, we can only suggest that future investigations should focus on these topics.

On the whole, the psychological status of patients with chronic heart failure is common to that of patients with any severe chronic disease, as previous studies have already shown<sup>[5-8]</sup>. Only NYHA class was shown to be associated with patients' psychological distress. This, in turn, confirms that, within the domain of objectivity, no links emerge between a specific mental health pattern and a specific organic disease, contrary to that which occurs in some diseases in which a specific symptomatology corresponds to specific psychological disorders (i.e. respiratory failure and agoraphobia, or chronic obstructive pulmonary disease and social anxiety). In other words, what can be predicted on the basis of the cardiological diagnosis is only a generic pattern of psychological distress, which arises solely from the effect of being severely and chronically functionally impaired, no matter what the disease<sup>[8]</sup>.

When we shift from objective mental health measures towards the subjectivity domain, only some connections between somatic and psychological realities can be



**Figure 3** Comparison between Satisfaction Profile profiles obtained from CHF patients divided according to their NYHA classification; \* $P < 0.01$ , \*\* $P < 0.001$ , • $P < 0.0001$ .

found. More precisely, only satisfaction about some components of physical functioning were associated with cardiological variables. We could say that through their subjective responses, patients provide a picture of the impact that their illness has on their life; somatic and psychological realities correspond almost solely within the physical dimension. In fact, the only link which emerges is between objective cardiological data and their subjective interpretation in the patients' mind (expressed by the responses to the questions of the physical functioning Satisfaction Profile factor).

When analysing the physical functioning factor by a multiple statistics method, we can see that of the considered cardiological variables only NYHA class and, to a lesser extent, pulmonary resistances predict (at least in part) patients' satisfaction about their physical functioning. Of the mental health variables, only depressive behaviours contributed in this sense.

These results mean that the existing, demonstrated and predictable impact of the disease on perceived physical functioning does not allow us to draw any inference about the disease impact on other life aspects. This is clearly visible in Fig. 3: the two Satisfaction Profile profiles almost overlap in all the factors, with the exception of physical functioning, despite the fact that the two profiles refer to two samples with diseases of different severity. By adopting questionnaires that looked only at assessing objective and/or subjective physical functioning, we would first lose information about patients' resources and well-being sources, and, secondly, we could erroneously infer that the quality of life of more severely ill patients is as poor as their health

status. In contrast, by exploring other life aspects, besides physical functioning, we can, for example, discover that chronic heart failure patients are satisfied with their psychological functioning and with their social relationships, regardless of the severity of their disease.

These results provide some suggestions for clinical practice. For example, by examining the patients' resources and well-being sources we could help patients to accept the illness and its limitations, focusing on the positive aspects of their life. Self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth have been suggested to be the core of well-being and the strength points of successful psychotherapies<sup>[35]</sup>. In helping chronic heart failure patients to deal with their illness, to neglect these adaptive aspects in favour of the perceived physical capacity could lead to reduced psychological improvement and to less effective adjustment processes. In other words, our data suggest that we aim for psychological intervention to strengthen or engender the positive in a patients' life, rather than to alleviate the negative<sup>[36]</sup>.

## Conclusions

Taken as a whole our results support the unquestionable importance of subjectivity in health-related quality of life, as well as objective measures. This is a small but important revolution in the way cardiologists traditionally tend to consider their patient's life. As Thompson

*et al.* so neatly stated, 'Objective measures of quality of life often bear little relationship to life satisfaction, whereas subjective indicators are often found to correlate highly with a global sense of well-being, as well as being more meaningful and sensitive barometers of quality of life'<sup>[37]</sup>. Accordingly, patients' subjective satisfaction should always be included in routine assessments and clinical interventions; they are a useful source of information on patient distress and psychological resources. This change in practice could lead to new awareness, closer to the patient's perspective, where pluses and minuses due to illness are not simply summed, but coexist in a personal balance that deserves the highest respect.

## References

- [1] Dracup K, Walden JA, Stevenson LW, Brecht ML. Quality of life in patients with advanced heart failure. *J Heart Lung Transplant* 1992; 11: 273-9.
- [2] Hecker JE, Norvell N, Hills H. Psychologic assessment of candidates for heart transplantation: toward a normative data base. *J Heart Transplant* 1989; 8: 171-6.
- [3] Walden JA, Stevenson LW, Dracup K *et al.* Extended comparison of Quality of Life between stable heart failure patients and heart transplant recipients. *J Heart Lung Transplant* 1994; 13: 1109-18.
- [4] Kuhn WF, Myers B, Brennan F *et al.* Psychopathology in heart transplant candidates. *J Heart Transplant* 1988; 7: 223-6.
- [5] Mayou R, Blackwood R, Bryant B, Garnham J. Cardiac failure: symptoms and functional status. *J Psychosom Res* 1991; 35: 399-407.
- [6] Lahdensuo A, Oyanen M, Ahonen A *et al.* Psychosocial effects of continuous oxygen therapy in hypoxemic chronic obstructive pulmonary disease patients. *Eur Resp J* 1989; 2: 977-80.
- [7] Carrol BT, Kathol RG, Noyes R, Wald T, Clamon GH. Screening for depression and anxiety in cancer patients using the Hospital Anxiety and Depression Scale. *General Hospital Psychiatry* 1993; 15: 69-74.
- [8] Majani G, Callegari S, Pierobon A *et al.* Il versante psicologico dello scompenso cardiaco cronico. Considerazioni da un'esperienza pluriennale. *G Ital Cardiol* 1997; 27: 244-54.
- [9] Fisher DC, Lake KD, Reutzel TJ, Emery RW. Changes in Health Related Quality of Life and depression in heart transplant recipients. *J Heart Lung Transplant* 1995; 14: 373-81.
- [10] Grady KL, Jalowiec A, White-Williams C. Improvement in Quality of Life in patients with heart failure who undergo transplantation. *J Heart Lung Transplant* 1996; 15: 749-57.
- [11] Bunzel B, Grundböck A, Laczkovics A, Holzinger C, Teufelsbauer H. Quality of Life after orthotopic heart transplantation. *J Heart Lung Transplant* 1991; 10: 455-9.
- [12] Rector TS, Ormaza SM, Kubo SH. Health status of heart transplant recipients versus patients awaiting heart transplantation: a preliminary evaluation of the SF-36 questionnaire. *J Heart Lung Transplant* 1993; 12: 983-60.
- [13] Rich MW. Epidemiology, pathophysiology, and etiology of congestive heart failure in older adults. *J Am Geriatr Soc* 1997; 45: 968-74.
- [14] Jaagosild P, Dawson NV, Thomas C *et al.* Outcomes of acute exacerbation of severe congestive heart failure: quality of life, resource use, and survival. SUPPORT Investigators. The Study to Understand Prognosis and Preferences for Outcomes and Risks of Treatments. *Arch Intern Med* 1998; 158: 1081-9.
- [15] Doughty R, Andersen V, Sharpe N. Optimal treatment of heart failure in the elderly. *Drugs Aging* 1997; 10: 435-43.
- [16] Blyth FM, Lazarus R, Ross D, Price M, Cheuk G, Leeder SR. Burden and outcomes of hospitalisation for congestive heart failure. *Med J Aust* 1997; 167: 67-70.
- [17] Jenkinson C, Jenkinson D, Shepperd S, Layte R, Petersen S. Evaluation of treatment for congestive heart failure in patients aged 60 years and older using generic measures of health status (SF-36 and COOP charts). *Age Ageing* 1997; 26: 7-13.
- [18] Grady KL, Jalowiec A, White-Williams C *et al.* Predictors of quality of life in patients with advanced heart failure awaiting transplantation. *J Heart Lung Transplant* 1995; 14: 2-10.
- [19] Feinstein AR, Fisher MB, Pigeon JG. Changes in dyspnea-fatigue ratings as indicators of quality of life in the treatment of congestive heart failure. *Am J Cardiol* 1989; 64: 50-5.
- [20] McKelvie RS, Teo KK, McCartney N, Humen D, Montague T, Yusuf S. Effects of exercise training in patients with congestive heart failure: a critical review. *J Am Coll Cardiol* 1995; 25: 789-96.
- [21] Kavanagh T, Myers MG, Baigrie RS, Mertens DJ, Sawyer P, Shepard RJ. Quality of life and cardiorespiratory function in chronic heart failure: effects of 12 months' aerobic training. *Heart* 1996; 76: 42-9.
- [22] Majani G. L'osservatorio sulla qualità della vita. *G Ital Cardiol* 1996; 26: 689-97.
- [23] Hunt SA. Cardiac transplantation: the 24th Bethesda Conference. *J Am Coll Cardiol* 1993; 22: 1-64.
- [24] Bertolotti G, Zotti AM, Michielin P, Vidotto G, Sanavio E. A computerized approach to cognitive behavioural assessment: an introduction to CBA 2.0 primary scales. *J Behav Ther Exp Psychiatry* 1990; 21: 21-7.
- [25] Bertolotti G, Sanavio E, Vidotto G, Zotti AM (eds). Un modello di valutazione psicologica in Medicina Riabilitativa: uso della Batteria CBA 2.0 Scale Primarie. Pavia: Fondazione Clinica del Lavoro, 1994.
- [26] Spielberger CD, Gorsuch RL, Lushene RE. The State-Trait Anxiety Inventory (STAI) Test Manual for Form X. Palo Alto: Consulting Psychologist Press, 1970.
- [27] Eysenck HJ, Eysenck SBC. Manual of the Eysenck Personality Questionnaire. London: Hodder and Stoughton, 1975.
- [28] Hodgson RJ, Rachman S. Obsessional-Compulsive Complaints. *Behav Res Ther* 1977; 15: 389-95.
- [29] Majani G, Callegari S, Pierobon A, Giardini A, Vidotto G. Il profilo di soddisfazione (SAT-P): un nuovo strumento di valutazione in ambito clinico. *Psicoterapia Cognitiva e Comportamentale* 1997; 3: 27-41.
- [30] Majani G, Callegari S. Test SAT-P. Soddisfazione soggettiva e qualità della vita. Trento: Erickson, 1998.
- [31] Majani G, Callegari S, Pierobon A, Giardini A, Viola L, Baiardini I, Sommaruga M. A new instrument in quality of life assessment: the Satisfaction Profile (SAT-P). *Int J Ment Health*, in press.
- [32] Perneger TV. What's wrong with Bonferroni adjustments. *BMJ* 1998; 316: 1236-8.
- [33] Muirhead J, Meyerowitz BE, Leedham B, Eastburn TE, Merrill WH, Frist WH. Quality of life and coping in patients awaiting heart transplantation. *J Heart Lung Transplant* 1992; 11: 265-72.
- [34] Collins EG, White-Williams C, Jalowiec A. Impact of the heart transplant waiting process on spouses. *J Heart Lung Transplant* 1996; 15: 623-30.
- [35] Ryff CD, Singer B. Psychological well-being: Meaning, measurement, and implications for psychotherapy research. *Psychother Psychosom* 1996; 65: 14-23.
- [36] Rafanelli C, Conti S, Ruini C, Ottolini F, Grandi S, Fava GA. A New Psychotherapeutic Strategy: Well-being Therapy. In: Sanavio E, ed. Behavior and Cognitive Therapy Today. Oxford: Elsevier Science, 1998.
- [37] Thompson DR, Meadows KA, Lewin RJP. Measuring quality of life in patients with coronary heart disease. *Eur Heart J* 1998; 19: 693-5.