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Routine Screening for Depression and Quality of Life in Outpatients With Congestive Heart Failure

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The influence of depression and perceived quality of life (QoL) on symptom perception and prognosis in congestive heart failure is well known. The authors therefore introduced routine questionnaire screening for these parameters in patients attending their outpatient heart failure clinic (N = 320). The authors found QoL to be significantly reduced, and almost every third patient screened positive for a depressive disorder. These patients got a clearly-defined treatment offer. The present study demonstrates that screening for depression and QoL is feasible without being too complex or time-consuming and easily implementable in an interdisciplinary outpatient setting. (Psychosomatics 2007; 48:112–116)

It is well known that patients with congestive heart failure (CHF) have high rates of depression. O'Connor and Joynt[1] report prevalence rates ranging from 11% to 25% for outpatients and 35% to 70% for inpatients, whereas only 6.6% of the general population meets the criteria for depression (12-month prevalence).[2] To date, a number of studies have examined the importance of depression on the illness course and its prognosis: Jiang et al.,[3] for example, found that the diagnosis of major depression was associated with increased mortality after 3 months and at 1 year in patients with CHF. Rumsfeld et al.[4] showed that depressive symptoms are a strong predictor of a short-term worsening of heart failure-specific symptoms. Jünger et al.[5] concluded that depression is a strong predictor of increased mortality in CHF patients not treated for depression. Furthermore, patients with CHF also show a reduced health-related quality of life (QoL) compared with patients who have other chronic diseases, as well as compared with the general population.[6] Also, a reduced QoL seems to be predictive for unscheduled readmissions and mortality.[7–9] Despite the obvious negative effects of depression and a reduced QoL on the course of CHF, these factors often go unrecognized and undertreated in clinical practice,[10,11] presumably because of the similarity of symptoms like fatigue, malaise, or insomnia, especially in older persons.[1] Because CHF is the only cardiovascular disorder of increasing incidence—approximately 200,000 new cases are anticipated annually in Germany alone[12]—there is a considerable need to expand the treatment offered.

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A standard screening, which is able to identify depression and psychosocial strains without being too complex or time-consuming,[1] and which could lead to clearly-defined treatment consequences for CHF patients,[13] is currently lacking. In May 2004, we therefore established and have since been evaluating such a routine screening program in the heart-failure outpatient department of the University Hospital of Heidelberg, Germany.

METHOD

Patient Sample

On average, 1,000 patients per year apply to the CHF Outpatient Department of the University Hospital of Heidelberg, Germany. In order to evaluate whether the screening program is feasible and efficient, we conducted the screening procedure over 2 days within a single week, covering 20% of the presenting patients. Therefore, 400 patients were expected to participate in our study. A total of 320 patients completed the screening questionnaires between May 2004 and May 2005 (participation rate: 80%). The participants ranged in age from 18 to 83 years (mean: 55.3; standard deviation [SD]: 16.6); 75% were men.

The most prevalent reasons for non-participation were conflicting appointments in other outpatient departments and inability to read or understand the questionnaire.

Screening Questionnaires

The screening instruments were the 9-item depression module from the Patient Health Questionnaire (PHQ–9)[14] and the 36-item Short-Form Health Survey (SF–36).[15] Both instruments are self-report questionnaires with very high reliability and validity.[14–20] The sensitivity (98%) and specificity (80%) of the Depression module from the PHQ has proved to be excellent.[16] Each of the 9 items ranges from 0 to 3 points. The recommended cut-off point for detecting a depressive disorder is a sum-score of 9 points; the cut-off for a major depressive disorder is 11 points.[14] The last item of the questionnaire asks about suicidal ideation. This enables quick identification of high-risk patients.

The patient's self-assessment of health-related QoL was measured by the German version of the SF–36.[15] This questionnaire is a generic, multidimensional instrument consisting of eight dimensions: physical functioning; role-functioning, physical; bodily pain; general health perceptions; vitality; social functioning; role-functioning, emotional; and mental health. SF–36 scores are converted to a scale of 0 to 100, a higher score indicating a higher QoL. A physical and mental summary score are also calculated. Both instruments are built into a short questionnaire booklet (4 pages), which takes patients approximately 10 minutes to complete.

Screening Algorithm and Treatment Offer

Patients completed the questionnaires during the waiting periods in the outpatient clinic. A Depression score between 0 and 4 points was classified as indicating no depressive symptoms. A score between 5 and 8 points indicated slightly increased depressive symptoms. For these subjects, the course of the depressive symptoms was re-evaluated at the next regular appointment (3 months–6 months later). With a score of ≥9 points, the presence of clinically relevant depressive symptoms was very likely,[16] and the patient was offered an appointment at the psychocardiological outpatient department the same day. Physicians and nurses were trained as to the interpretation of the main aspects of the questionnaires.

Statistical Analysis

We report the estimated prevalences for both QoL and Depression by frequency analysis; *t*-tests for independent groups and analyses of variance were used to evaluate group differences. The statistical analysis was carried out with SPSS 11.5.

RESULTS

Sociodemographic Data and Functional Variables

Sociodemographic data and functional variables are shown in Table 1. Dilative cardiomyopathy was the main reason for CHF, followed by coronary heart disease, and other disease entities; 42.4% of the patients suffered from a severely reduced left-ventricular ejection fraction (LVEF ≤25%).

Depression

The patients had a mean score of 6.5 (SD: 4.82) on the Depression module of the PHQ; 28.8% (N = 92) had a score ≥9, the recommended cut-off for any depressive disorder. This Depression risk group had a mean score of 12.7 (SD: 3.68); 18.8% of the sample (N = 60) had a score ≥11, the recommended cut-off for a major depressive disorder. This Major Depression risk group had a mean score of 14.5 (SD: 3.41); 27 patients had a Depression score ≥9, but did not endorse any affective symptoms of a depressive dis-

order (loss of interest and/or feeling sad). Overall, 12.8% of the sample (N = 41) noted suicidal ideations in the questionnaire.

The correlation between age and Depression score was not significant ($r = 0.15$; $p = 0.79$). A median-split analysis (M = 48) revealed no significant differences in Depression scores between patients under and over age 48 years. Men and women did not differ significantly in the Depression score ($t[317] = -1.1$; $p = 0.23$).

Depression scores differed significantly among the New York Heart Association (NYHA) functional classes, with the highest Depression scores in NYHA Class III ($F[2, 316] = 30.91$; $p \leq 0.001$; Table 2). No significant differences in Depression scores were found among the four different levels of left-ventricular function (LVEF)-reduction (high: ≤25%; moderate: >25% to ≤40%; mild: >40% to ≤50%; or normal: >50%; $F[3, 290] = 0.28$; $p = 0.82$).

Psychocardiological Treatment Offered

Thirty patients (32.6%) of the depression risk group (cut-off: ≥9; N = 92) accepted our psychocardiological treatment offer at once. Twenty-seven patients (29.3%) expressed interest if their emotional distress should worsen. The general-practitioners of 12 patients (13%) were informed about the potential depressive disorder if the patients could not be informed personally the same day. A total of 18 patients (19.6%) rejected our treatment offer because they were not willing to talk about their emotional distress or stated they would not need any psychocardiological treatment. Five patients (5.4%) were already in psychotherapy. In the case of suicidal ideation (N = 41), we conducted an immediate assessment.

Quality of Life

Figure 1 shows the QoL scores of our sample as compared with the general German population and a representative sample of patients with CHF.[15] Compared with the general German normative population (N = 2,914, classified for age and sex), the QoL of our sample was significantly reduced (Physical summary score: $t[319] = -16.67$; $p \leq 0.001$; Mental summary score: $t[319] = -4.73$; $p \leq 0.001$). Regarding the data from a representative sample of patients with CHF (N = 250, classified for age and sex) the Physical and Mental summary scores of our sample were significantly increased (Physical summary score: $t[319] = 2.65$; $p = 0.004$; Mental summary score: $t[319] = 3.79$; $p \leq 0.001$).

Physical and Mental summary scores differed significantly among the NYHA functional classes, with the highest QoL scores in NYHA Class I (Physical summary score: $F[2,246] = 80.69$; $p \leq 0.001$; Mental summary score: $F[2,246] = 14.06$; $p \leq 0.001$; Table 2). Our sample revealed no significant differences by gender.

Correlations between Depression and the Physical score ($r = -0.43$; $p \leq 0.001$) and the Mental score ($r = -0.65$; $p \leq 0.001$) are significant, indicating the need for routine assessment in a multidisciplinary outpatient setting.

TABLE 1. Sociodemographic Data, Functional Variables, and Depression

	Men N = 240 (75%)	Women N = 80 (25%)	All (N = 320)
Age, years	56.8 (12.8)	55.3 (12.6)	56.4 (12.7)
New York Heart Association (NYHA) Functional Class			
Class I	27.1%	28.8%	27.5%
Class II	35.4%	37.4%	35.9%
Class III	37.5%	33.8%	36.6%
Left-Ventricular Ejection Fraction (LVEF) Reduction			
High (≤25%)	44.5%	36.4%	42.4%
Moderate (>25% – ≤40%)	37.1%	37.7%	37.3%
Mild (>40% – ≤50%)	11.5%	15.6%	12.5%
Normal (>50%)	6.9%	10.3%	7.8%
Diagnosis			
Coronary artery disease	34.0%	27.5%	32.4%
Dilatative cardiomyopathy	60.2%	61.3%	60.4%
Other	5.8%	11.2%	7.2%
Patient Health Questionnaire (PHQ–9) Depression Score			
≥9	26.3%	36.3%	28.8%
≥11	17.5%	19.2%	18.8%

Values are mean (standard deviation) or percent.

DISCUSSION

The present study confirms the evidence[1,6] of high prevalence rates of depression and reduced QoL in patients with CHF. This reinforces the urgent need for adequate diagnostic tools and treatment protocols for this growing patient population. Although nearly one-third of this unselected population showed screening results indicating depressive pathology, only a few patients were already in psychosomatic or psychotherapeutic treatment. This is an alarming finding, considering the importance of depression and reduced QoL as risk factors for mortality and rehospitalization[3–5,7–9] in CHF patients.

The present study proposes a standard screening algorithm for diagnosing depression and reduced quality of life in patients with CHF. The algorithm was designed for outpatient departments or general practice. A major aim of the algorithm design was to ensure a diagnostic work-up without any loss of quality while facing the typical lack of time in clinical practices. Moreover, we aimed to offer treatment immediately to patients with suicidal ideation and patients with depression. This was successful for most (87%) of the patients who screened positive for a depressive disorder.

However, 13% could not be informed personally on the same day: in these cases, patients had to leave the CHF Department earlier than expected because of personal appointments or other time constraints. These patients' general-practitioners were informed about the possible depressive disorder and the treatment offer. To avoid this problem, we now have implemented faster evaluation algorithms for the questionnaires; that is, by electronic data entry and analysis.

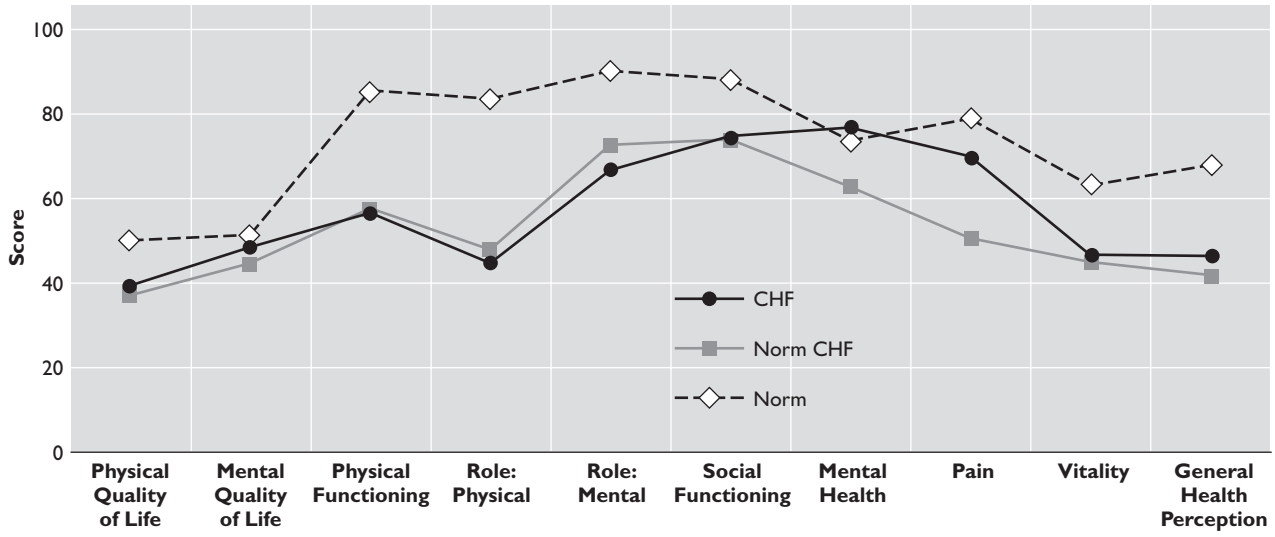
One-third of the patients who screened positive for a depressive disorder accepted our treatment offer and received psychotherapeutic and/or pharmacologic intervention to cope with their depressive symptoms. Nevertheless, nearly 50% of the depression risk group rejected the treatment offer or would only accept an intervention if their emotional distress worsened. This may be, in part, because some these patients did not endorse any characteristic af-

TABLE 2. Mean Scores for Depression and Quality of Life, by New York Heart Association (NYHA) Functional Class

NYHA Class	Depression Score (PHQ–9)	Physical Summary Score (SF–36)	Mental Summary Score (SF–36)
I	3.9 (3.4)	48.0 (7.7)	52.9 (8.4)
II	6.1 (4.4)	39.8 (8.9)	48.6 (10.2)
III	8.8 (5.1)	30.9 (8.9)	44.5 (11.2)

Values are mean (standard deviation).

FIGURE 1. Quality of Life: SF–36 Scales



CHF: congestive heart failure; Norm CHF: comparison CHF group; Norm: normal-control age- and gender-matched subjects.

fective symptoms of a depressive disorder (loss of interest and/or feeling sad) on the PHQ Depression module. The score of these patients was mainly based on somatic symptoms, for example, fatigue, insomnia, or concentration deficits, which, as mentioned above, are also typical symptoms in CHF. Against this background, a screening algorithm that focuses only on the score of a depression scale might be too sensitive for patients with CHF and thus lead to an overestimation of the incidence of depressive disorders. Thus, a categorical evaluation of the PHQ, as suggested by Spitzer et al.,[19] might lead to better results. Spitzer et al. found that if patients confirm at least two symptoms on the Depression scale with "more than half the days" and one of these is Item #1 or #2 (affective symptoms) a "depressive syndrome" may be diagnosed. Major depression is diagnosed if patients agree to 5 of the 9 depression items with at least "more than half the days." This will be tested in our ongoing studies with larger sample sizes within the framework of the German Heart Failure Network (KNHI).

The fact that our patient sample had higher quality-of-life scores than the normative population of patients with CHF might be explained by the lower mean age (55.3 versus 63.2 years in the CHF norm population) and therefore potentially lower medical comorbidity of our sample as compared with the norm population.

In summary, there is an increasing need not only to individually optimize medical treatment according to clinical practice guidelines but also to diagnose and treat depressive comorbidity and reduced quality of life in the clinical routine in CHF. We have shown that our new screening algorithm is feasible in a CHF outpatient department. Moreover, it encourages interdisciplinary care by ensuring close collaboration between the psychosomatic and cardiologic departments. Although, at first glance, such a screening process may appear to increase the workload for the outpatient department and the psychosomatic team; the increased efficiency in screening for depression as an important comorbidity of CHF may further improve prognosis and quality of life in our patients.

Authors Nicole Holzapfel, M.A., and Christian Zugck, M.D., were equal contributors to this article.

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