

Short report

Quality of life in patients with Cystic Fibrosis: Association with anxiety and depression

Trudy Havermans*, Kristine Colpaert, Lieven J. Dupont¹

Adult Cystic Fibrosis Centre, University Hospital Leuven, Belgium

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Abstract

Background: Few studies of patients with CF have looked at the association between patient reported Health-Related Quality of Life (HRQoL) and anxiety and depression. This study investigated whether CF patients with symptoms of anxiety or depression reported lower Health-Related Quality of Life (HRQoL) scores.

Methods: 57 adult CF patients completed the Hospital Anxiety and Depression Scale (HADS) and the Cystic Fibrosis Questionnaire, a CF-specific measure of HRQoL. Analyses of variance with lung function as a covariate were used to investigate differences in HRQoL between groups of patients with and without symptoms of anxiety and depression.

Results: Mean age was 26.7 years (SD 8.1), mean FEV1 %predicted was 65.09 (SD 22.18). Anxiety and depression scores were low and similar to normative scores. After controlling for lung function, patients with symptoms of anxiety reported lower on vitality, emotional functioning, social, treatment burden, health perceptions and respiratory symptoms. Those with depressive symptoms reported lower HRQoL scores for emotional functioning, eating disturbances and body image.

Conclusions: Preliminary evidence was found of the role of anxiety and depression in different areas of quality of life in CF, which may help in the development of appropriate medical and psychosocial treatment programs.

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Keywords: Health-related quality of life; Anxiety; Depression

1. Introduction

Health-related quality of life (HRQoL) has aroused substantial interest in psychological and medical research about Cystic Fibrosis (CF). It is a multidimensional psychological construct that encompasses physical, psychological, social and functional areas of life and the impact of health and illness on these.

Several studies have investigated psychosocial, demographic and/or clinical factors on CF patients' perception of their HRQoL [1–5]. Important CF-specific measures of HRQoL have been developed in different languages [6–9]. Recent reviews have discussed HRQoL as an outcome measure in clinical trials [10,11],

and its association with antibiotic therapies [12] and lung transplantation [13]. Many factors relate to aspects of HRQoL, including coping, medical variables and compliance; but, importantly, medical indicators of disease severity (e.g. lung function, body mass index and pulmonary exacerbations) are only modestly related to HRQoL scores [5,3].

Little is known about the relationship between anxiety or depression and HRQoL in CF. Studies have shown that adults with CF report relatively healthy psychological functioning [14,15]. In contrast, Riekert et al. [4] found depressive symptoms to be prevalent among adults with CF and associated with poorer HRQoL even after controlling for lung function.

The present study was conducted to investigate further the relationship between HRQoL and anxiety and depression, taking into account lung function. Patients with stable disease were screened for anxiety and depression using the Hospital Anxiety and Depression Scale (HADS) [16] with a view to examining

* Corresponding author. University Hospital Leuven 49, Herestraat, 3000 Leuven, Belgium. Tel.: +32 16 340268; fax: +32 16 343816.

E-mail address: trudy.havermans@uzleuven.be (T. Havermans).

¹ Lieven Dupont is a part-time senior research fellow of the FWO Vlaanderen.

Table 1
Patient characteristics

Male–Female	29–28
Mean age (SD)	26.79 (8.15)
Lung function FEV ₁ %predicted	65.09 (22.18)

whether those who screened borderline/clinical anxious or depressed reported a lower HRQoL.

2. Method

2.1. Study design and subjects

This cross-sectional study recruited patients consecutively attending the Adult CF Centre at the University Hospital Leuven between September 2006 and September 2007. Patients whose disease was stable were asked to complete two questionnaires during an outpatient clinic visit as part of their annual review. Fifty seven patients (67% of the adult clinic) completed the questionnaires. Table 1 shows patient characteristics. Two patients were evaluated for lung transplantation at the time of this study. None of the patients declined to complete the questionnaires, but patients experiencing a CF exacerbation or complication, or admitted for treatment with IV antibiotics, were excluded.

2.2. Measures

2.2.1. HRQoL

HRQoL was measured using a Dutch translation of the Teen/Adult version of the CF Questionnaire (CFQ-14+) [17]. This consists of 44 items across 12 scales (Table 2). The CFQ-14+ has good reliability with Cronbach alpha 0.67 to 0.94. Response choices generally included ratings of frequency and difficulty on a 4-point scale (1 = 'always' to 4 = 'never'; 1 = 'a lot of difficulty' to 4 = 'no difficulty') or true/false responses (1 = 'very true' to 4 = 'very false'). Scores were standardized on a 0- to 100-point scale, with higher scores representing better quality of life.

2.2.2. Anxiety and depression

Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS) [16]. This screening

Table 3

Univariate analysis of variance with mean CFQ14+ domains scores as dependent variables and anxiety and depression as independent variables, controlling for lung function

CFQ-14+ domain	Anxiety	Depression
	Normal	Normal
	Borderline/clinical	Borderline/clinical
Physical functioning	79.14 (6.41) 65.62 (6.20) $F=2.68$, $p=0.10$	72.46 (4.26) 72.29 (9.40) $F=.000$, $p=0.98$
Role	71.61 (6.11) 61.84 (5.91) $F=1.54$, $p=0.22$	70.76 (4.06) 62.68 (8.96) $F=.58$, $p=0.45$
Vitality	63.69 (5.25) 47.96 (5.08) $F=5.40$, $p=0.02$	58.41 (3.49) 53.24 (7.71) $F=.33$, $p=0.57$
Emotional functioning	62.43 (4.81) 48.13 (4.65) $F=5.34$, $p=0.02$	69.53 (3.19) 41.02 (7.05) $F=11.81$, $p=0.001$
Social	68.77 (4.59) 56.10 (4.44) $F=4.57$, $p=0.03$	65.11 (3.05) 59.76 (6.74) $F=.45$, $p=0.50$
Body image	65.71 (6.08) 61.60 (5.88) $F=.27$, $p=0.60$	81.68 (4.04) 45.63 (8.92) $F=11.79$, $p=0.001$
Eating disturbances	77.68 (6.17) 75.09 (5.97) $F=.11$, $p=0.75$	88.78 (4.10) 64.01 (9.05) $F=5.41$, $p=0.02$
Treatment burden	58.02 (4.98) 43.17 (4.82) $F=5.37$, $p=0.02$	53.39 (3.31) 47.79 (7.31) $F=.42$, $p=0.51$
Health perceptions	54.06 (6.38) 29.40 (6.17) $F=8.99$, $p=0.004$	46.85 (4.24) 36.61 (9.37) $F=.86$, $p=0.36$
Weight	75.22 (8.80) 70.64 (8.51) $F=.16$, $p=0.68$	77.98 (5.85) 67.88 (12.92) $F=.44$, $p=0.51$
Respiratory symptoms	76.54 (4.80) 58.77 (4.65) $F=8.22$, $p=0.006$	68.02 (3.19) 67.29 (7.05) $F=.008$, $p=.093$
Digestive symptoms	78.36 (5.38) 75.40 (5.20) $F=.83$, $p=0.67$	80.87 (3.57) 72.89 (7.89) $F=.74$, $p=0.39$

Mean scores evaluated at lung function=65.09.

instrument consists of seven items that contribute to an anxiety score and seven for a depression score, each on a four-point Likert scale (0–3) with high scores indicating more symptoms.

Table 2
CFQ-teen/adult scales (CFQ-14+)

CFQ-14+ dimensions	No. items	Sample items
Physical functioning	8	Walking as fast as others
Role	2	How often were you absent from school/work during the last 2 weeks because of your illness or treatments?
Vitality	4	You felt tired
Emotional functioning	5	You felt worried
Social	5	I get together with my friends a lot
Body image	3	I think I am too thin
Eating disturbances	3	I have to force myself to eat
Treatment burden	2	Compared to 3 months ago, how much time do you currently spend on your treatment?
Health perceptions	3	I feel healthy
Weight	1	Have you had trouble gaining weight?
Respiratory symptoms	6	Have you had trouble breathing?
Digestive symptoms	2	Have you had abdominal pain?

Minimum score on both scales is 0; maximum score is 21. An overall score of 0–7 indicates no reason to suspect anxiety or depression; a score of 8–10 indicates possible anxiety or depression and a score higher than 11 indicates the possibility of a clinical anxiety/depression disorder. Correlation between the anxiety and depression scales is 0.63, $p < 0.001$. For this study, patients scoring 8 or above were allocated to the borderline/clinical anxious or depressed group.

3. Results

3.1. HRQoL lung function

Lower FEV₁ %predicted scores were associated with lower scores on physical functioning and a worse perception of general health (Pearson correlation $r = 0.27$ and 0.38 respectively, $p < 0.05$).

3.2. Hads

The mean scores on the HADS were 5.6 (SD 3.9) for anxiety and 3.5 (SD 3.6) for depression. These scores were similar to reference values from a healthy population [18]: anxiety 5.1 (SD 3.6) and depression 3.4 (SD 3.3). For anxiety, 39 patients (70%) scored in the normal category and 18 (30%) in the borderline/clinical category. For depression, 48 (87%) and 9 (13%) patients scored in the normal and borderline/clinical categories, respectively. No differences were found in FEV₁ % predicted between the normal versus borderline/clinical anxious or depressed groups.

3.3. HRQoL in relation to anxiety and depression

Analyses of variance were conducted with CFQ-14+ domains as dependent variables and anxiety and depression as independent variables (Table 3). After controlling for lung function, those patients who reported symptoms of anxiety had poorer HRQoL scores for vitality, emotional functioning, social, treatment burden, health perceptions and respiratory symptoms. Those with depressive symptoms reported lower HRQoL scores for emotional functioning, eating disturbances and body image.

4. Discussion

The results relating CFQ-14+ domains to lung function were in line with those reported by others [4,7,17,19], with lower FEV₁ %predicted scores correlating with lower scores in the domains physical functioning and health perceptions.

As with other studies on anxiety and depression in CF [14], but contrary to the results of Riekert et al. [4], patients in our study did not report significantly more symptoms of anxiety and depression than their non-CF peers. After controlling for lung function, patients with borderline/clinical anxiety and/or depression scored significantly lower on aspects of HRQoL. Patients with symptoms of anxiety reported lower on vitality, emotional functioning, social treatment burden, health perceptions and respiratory symptoms. Patients with symptoms of

depression reported lower on emotional functioning, eating disturbances and body image. Both anxiety and depression have been described in other chronic conditions as risk factors for poor adherence to therapy, increased mortality and increased health care utilization [20–22]. Screening for anxiety and depression may help in the development of treatment programs to preventing these risk factors.

The results do not, of course, specify the direction of the relationship between anxiety and depression and HRQoL. Anxiety may lead a patient to report worse aspects of HRQoL, or the patient's perception of a poor HRQoL might be the cause of anxiety, perhaps leading in turn to non-compliance and deterioration of health. This issue is particularly important when using HRQoL as an outcome measure in trials. In trials one needs to be certain that the outcome measure actually measures the underlying concepts of HRQoL and not anxiety or depression or other variables.

Even though HRQoL was measured using a CF-specific scale, it is possible that the observed relationship between anxiety and depression and certain domains of HRQoL can also apply in non-CF peers and is not specifically linked with CF.

The HADS is an instrument that reliably screens or rules out anxiety and depression but is not a diagnostic tool and may not be interpreted as such [20,21,23]. Despite this limitation—which warrants further study—the HADS is quick and easy to administer, and its items do not include reference to physical symptoms. Results should be considered alongside clinical observations and further assessments carried out if needed.

5. Conclusion

This study provides preliminary evidence of a relationship between anxiety and depression and HRQoL in patients with CF. Screening for anxiety and depression may help in the development of appropriate medical and psychosocial treatment programs and in improving some patients' perception of their HRQoL.

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