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Effect of a pharmacological intervention on quality of life in patients with obsessive-compulsive disorder

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Patients with obsessive-compulsive disorder (OCD) not only suffer from obsessive-compulsive symptoms, but also the disorder is associated with aberrant social functioning and a diminished quality of life (QoL). Although studies concerning the effect of treatment interventions on symptoms are common, studies with regard to the effect of treatment interventions on QoL are scarce. We examined the effect of a pharmacological intervention on QoL in 150 patients with OCD. Furthermore, we studied whether two different drugs, venlafaxine and paroxetine, differed in their effect on QoL. Finally, we examined whether any found improvement in QoL was related to improvement in symptoms and/or the baseline self-directedness score, which is one of the character dimensions of the psychological model of Cloninger. We demonstrated that QoL, as assessed with the Lancashire Quality of Life Profile, improved following pharmacological intervention, for which

paroxetine and venlafaxine appeared to be equally effective. Furthermore, neither improvement in symptoms, nor baseline self-directedness, was associated with the improvement in QoL. *Int Clin Psychopharmacol* 18:29–33
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Introduction

Obsessive-compulsive disorder (OCD) is a chronic and often disabling condition, afflicting approximately 0.7–2.1% of the general population (Bebbington, 1998). OCD patients not only suffer from symptoms, but the condition also causes deficits in social functioning and quality of life (QoL). Recent studies have shown that patients with OCD show disabilities and poor QoL even after amelioration of the OCD symptoms (Hollander *et al.*, 1996; Koran *et al.*, 1996; Bystritsky *et al.*, 2001). Measures of QoL therefore seem to assess an important aspect of OCD. Rather than a narrow symptom-focused view, a more holistic view reflecting the complex and broad impact that mental illness has on patients can be obtained by using QoL instruments (Hansson *et al.*, 2001). Although a clear definition of QoL is lacking, the patient's subjective perceptions and feelings, concerning basic life domains and life as a whole, are regarded as central to QoL assessment (Barry *et al.*, 1993).

Cross-sectional studies have indicated that QoL ratings in patients with OCD are lower than in the general population and comparable to those reported for depressed patients and schizophrenic patients (Hollander *et al.*, 1996; Koran *et al.*, 1996; Grabe *et al.*, 2000; Bobes *et al.*, 2001). In order to be useful for treatment research, measures of QoL should be sensitive to changes in clinical and/or social conditions of patients. This would

require prospective longitudinal studies that evaluate the same patients before and after interventions have taken place, or when social conditions have changed. To the best of our knowledge, only one prospective longitudinal study with regard to QoL has been reported in OCD patients. Bystritsky *et al.* (1999) examined the effect of treatment, a combination of medication and behaviour therapy, on a QoL measure in OCD. They found that both QoL and obsessive-compulsive symptoms improved following treatment, but changes in both domains were unrelated.

Since Bystritsky *et al.* (1999) studied the effect of a combination of behaviour therapy and medication, it remains unclear whether improvement in QoL resulted from the pharmacological intervention, the behaviour therapy, or the combination of both. Due to the relatively limited availability of behavioural treatment, at present, most OCD patients are treated pharmacologically (Koran *et al.*, 2000). Therefore, it would be important to know whether pharmacological treatment by itself will result in improvement of QoL. Furthermore, a study in depression has shown that different antidepressants can have different effects on QoL (Souetre *et al.*, 1996). In the study by Bystritsky *et al.* (1999), no information was available with regard to which pharmacological agents were prescribed. In a recent study from our group, it was shown that paroxetine and venlafaxine have the same

effect on symptomatic improvement as measured with the Yale–Brown Obsessive–Compulsive Scale (Y-BOCS) (Denys, 2002). Whether the same holds for their effect on QoL remains to be shown.

In a study of schizophrenic and schizoaffective patients, on the relationship between QoL, symptoms and personality dimensions, it was shown that the variance of different measures of QoL was largely explained by symptoms, and next to it, by one of the character dimensions (i.e. self-directedness) from the psychobiological model of Cloninger *et al.* (1993). Self-directedness refers to the ability of an individual to control, regulate and adapt behaviour to fit the situation in individually chosen goals and values (Cloninger *et al.*, 1993). The relationship between personality and QoL has only been studied cross-sectionally (Kentros *et al.*, 1997; Hansson *et al.*, 2001). Hence, whether baseline personality ratings are related to changes in QoL following treatment is unknown.

The aims of this study were threefold. First, we wanted to assess whether QoL is effected by pharmacological treatment. The second aim was to study whether two different drugs, venlafaxine and paroxetine, differed in their effect on QoL. Third, we wanted to examine whether treatment response and/or baseline self-directedness scores were related to improvement in QoL.

Methods

Subjects

One hundred and fifty drug free patients with a primary diagnosis of OCD according the DSM-IV (American Psychiatric Association, 1994) participated in a double-blind study comparing the efficacy of two antidepressants, venlafaxine and paroxetine. The primary aim of this study was to compare the efficacy of venlafaxine and paroxetine, for which the results are published elsewhere (Denys *et al.*, 2002). The MINI International Neuropsychiatric Interview (Sheehan *et al.*, 1998) was used to establish the diagnosis. Written informed consent was obtained from all patients. Subjects were outpatients, aged 18–70 years, with a minimum score of 16 on the Y-BOCS. Patients with comorbid axis I conditions (major depression; bipolar disorder; schizophrenia or any other psychotic disorder; tic disorder; substance related disorder during the past 6 months) or a Hamilton Depression Rating Scale (Hamilton, 1967) score higher than 16 were excluded. Patients who used antidepressants or neuroleptics 2 weeks before the screening visit or fluoxetine 4 weeks before screening were also excluded. Cognitive and/or behavioural treatment 3 months prior the screening visit was also an exclusion criterion. Patients taking psychotropic drugs, with the exception of 30 mg of oxazepam or an equivalent dose of any other

benzodiazepine during the trial, were excluded from the analysis.

Patients were randomly allocated to receive either paroxetine (60 mg/day) or venlafaxine XR (300 mg/day) fixed dose for 12 weeks. All measures were taken at baseline and at the end of the 12-week treatment period, except for the temperament and character inventory, which was only administered at baseline.

Measures

Y-BOCS (Goodman *et al.*, 1989)

The 10-item Y-BOCS was used to assess severity of obsessive–compulsive symptoms. Higher scores (range 0–40) on this interview indicate more severe obsessive–compulsive symptoms.

Hamilton Anxiety Rating Scale (HAS) (Hamilton, 1959)

The HAS was used as secondary symptom outcome measures. It assesses severity of anxiety. Higher scores indicate more severe symptomatology.

Temperament and Character Inventory (TCI) (Duijsens *et al.*, 1997)

The Dutch translation of the TCI, a 240-item questionnaire, was used to assess personality dimensions. It allows for analyses of four temperament (i.e. harm avoidance, novelty seeking, persistence and reward dependence), and three character dimensions (i.e. self-directedness, cooperativeness and self-transcendence). We only used the self-directedness score in the present study. While we decided to administer the TCI when the trial was already running, it was only administered to the last 75 patients participating in the trial.

The Lancashire Quality of Life Profile: extended Dutch version (LQoLP) (Oliver *et al.*, 1997; van Nieuwenhuizen *et al.*, 2001)

Quality of life was assessed with the LQoLP. The LQoLP is a structured self-report interview to be administered by trained interviewers. It assesses objective QoL and subjective life satisfaction in six domains. An overall subjective QoL score is obtainable, which comprises a total score of subjective QoL on all domains. The instrument also includes a global well being measure, which is the sum of two questions concerning global well being. It also contains a global self-reported QoL measure where the subject rates the present life situation on a worse-best possible scale. Subjective QoL ratings in the domains, as well as global well being, are made on a seven-point likert-type scale. Further subscales included in the LQoLP, but not used in the present study, are an affect balance scale, a self-esteem scale and a happiness scale. The LQoLP has been used in a number of international studies and has shown satisfactory results

in reliability and validity tests (Oliver *et al.*, 1997; van Nieuwenhuizen *et al.*, 2001).

Statistical analysis

Treatment results were analysed with a two (group: venlafaxine versus paroxetine) by two (time: pre-treatment versus post-treatment) design using multivariate analyses of variance. In case of a multivariate significant time effect, ANOVAs were performed for individual outcome measures.

To examine whether improvement in QoL measures was related to symptomatic improvement, patients were divided into responders and non-responders on treatment. Response was defined as a reduction of at least 35% on the Y-BOCS. Subsequently, treatment results with regard to the QoL measures were analysed with a two (group: responder versus non-responder) by two (time) design. The same procedure was repeated with high and low self-directedness as a between group factor. Patients with a self-directedness score within (or above) 1 SD of the normal population were considered as demonstrating high self-directedness. The sample with a self-directedness score lower than 1 SD compared to the normal population were considered as demonstrating low self-directedness. Because the TCI was not directly available at the start of the trial, the TCI analysis was performed on a subset of the total sample.

Results

One hundred and one of the 150 patients who entered the study were available for analysis. Forty-nine patients were excluded from the analysis due to incomplete data. Twenty-one patients did not complete the 12-week treatment period and 28 patients were excluded because of incomplete assessments. No differences in illness duration, sex ratio, baseline QoL scores and symptom severity existed between patients in the analyses and patients who were excluded.

Of the 101 patients, 47 received paroxetine and 54 received venlafaxine. When the patient group was divided into responders and non-responders to treatment, on the basis of a reduction of at least 35% on the Y-BOCS, 49 subjects were rated as responders and 52 as non-responders. Of the 69 patients of whom the TCI was available, 31 subjects were classified as demonstrating low self-directedness (scoring more than 1 SD under the Dutch norms) and 38 subjects were classified as demonstrating high self-directedness (scoring within or above 1 SD of the Dutch norms).

Demographic and clinical characteristics of the patients who entered the analyses are reported in Table 1. The average score of 26 on the Y-BOCS in the present population indicates a moderate severity of symptoms

(Goodman and Price, 1992). Most patients had been treated previously for OCD, 57% had received drug treatment, while 40% of the patients had previously received behaviour therapy.

As shown in Table 2, the paroxetine and venlafaxine group improved following treatment on all measures. Symptoms decreased and QoL increased. Repeated measures analysis revealed a main effect for time ($F = 18.33$, d.f. = 1, $P < 0.000$), but no time by drug interaction ($F = 1.75$, d.f. = 1, $P = 0.189$). ANOVAs for individual outcome measures revealed a main effect for time and no interaction between time by drug for the symptom measures (i.e. the Y-BOCS and the HAS), as well as the QoL measures (i.e. global subjective well being, overall QoL and general subjective QoL) (Table 3).

Repeated analysis of variance for the QoL measures with time as within factor and responder status as between factor, revealed a main effect for time ($F = 8.06$, d.f. = 1, $P = 0.005$) and no interaction between time by responder status ($F = 0.015$, d.f. = 1, $P = 0.901$). The same analysis was repeated, but with low versus high self-directedness as between factor, in a subset of 69 patients. Again a main effect for time was found ($F = 4.69$,

Table 1 Characteristics of the sample

	<i>n</i>	%
Age, mean (SD)	36 (12)	
Sex		
Woman	65	63.7
Man	37	36.3
Y-BOCS, mean (SD)	26 (5)	
HAS, mean (SD)	11 (6)	
Treated earlier for OCD	82	80.4
Illness duration, mean (SD)	16 (11)	

Y-BOCS, Yale-Brown Obsessive-Compulsive Scale; HAS, Hamilton Anxiety Rating Scale; OCD, obsessive-compulsive disorder.

Table 2 Mean scores for Y-BOCS, HAS, global subjective well being, overall subjective well being, and global subjective quality of life pre- and post treatment for the paroxetine and venlafaxine group

	Pre-treatment	SE	Post-treatment	SE
Paroxetine				
Y-BOCS	24.8	0.74	16.2	1.1
HAS	10.9	0.96	5.7	0.64
Global subjective well-being	9.6	0.33	8.1	0.33
Overall subjective quality of life	32.8	0.57	31.6	0.62
Global subjective quality of life	90.6	13.95	52.2	3.57
Venlafaxine				
Y-BOCS	26.5	0.67	18.2	0.99
HAS	11.3	0.88	7.1	0.58
Global subjective well-being	8.7	0.30	7.4	0.29
Overall subjective quality of life	31.0	0.53	29.8	0.57
Global subjective quality of life	59.9	12.76	46.0	3.26

Y-BOCS, Yale-Brown Obsessive-Compulsive Scale; HAS, Hamilton Anxiety Rating Scale.

Table 3 ANOVAs for the Y-BOCS, HAS, global subjective well being, overall subjective well being, and global subjective quality of life with time as within factor and drug as between factor

Measures	F	d.f.	P
Y-BOCS			
Time	176.22	1, 99	< 0.000
Time $\times$ drug	0.527	1, 99	0.873
HAS			
Time	56.78	1, 99	< 0.000
Time $\times$ drug	0.716	1, 99	0.399
Global subjective well-being			
Time	41.55	1, 99	< 0.000
Time $\times$ drug	0.092	1, 99	0.762
Overall subjective quality of life			
Time	17.99	1, 99	< 0.000
Time $\times$ drug	0.036	1, 99	0.85
Global subjective quality of life			
Time	7.49	1, 99	0.007
Time $\times$ drug	1.66	1, 99	0.200

Y-BOCS, Yale-Brown Obsessive-Compulsive Scale; HAS, Hamilton Anxiety Rating Scale.

d.f. = 1, $P = 0.034$) but no interaction between time by low versus high self-directedness ($F = 0.346$, d.f. = 1, $P = 0.558$).

Discussion

The aim of the present study was to examine whether QoL was affected by pharmacological treatment. The results indicate that all three QoL ratings were improved after the 12-week treatment period. Furthermore, the class of drug prescribed, venlafaxine or paroxetine, did not appear to have a differential effect. In other words, with regard to QoL improvement, venlafaxine and paroxetine, are equally effective. This is in line with the effects of venlafaxine and paroxetine on symptomatic improvement (Denys, 2002). In addition, it was found that responders and non-responders, as defined with a reduction of 35% on the Y-BOCS, did not differ with regard to improvement of QoL. Finally, baseline self-directedness scores were not related to QoL improvement. It was found that high versus low self-directedness did not differentiate in QoL improvement.

As mentioned in the introduction, in order to be useful in treatment research, QoL measures should be sensitive for changes. This appears to be the case for the Lancashire Quality of Life Profile (van Nieuwenhuizen *et al.*, 2001), which was used in this study. All three scales (global subjective well being, overall subjective QoL and global subjective QoL) of the Lancashire Quality of Life Profile showed statistically significant changes. However, although the changes were statistically significant, with regard to the scales global subjective well being and overall subjective QoL, the absolute changes were small. Whether this statistically significant difference is also clinically meaningful requires further clarification.

Only one study in OCD reported on the effect of treatment on QoL (Bystritsky *et al.*, 1999). It was found

that QoL improved following treatment consisting of a combination of pharmacological and behaviour therapy. To the best of our knowledge, this is the first study in OCD showing that QoL improves following pharmacological intervention. This is of importance because, currently, many OCD patients are treated pharmacologically. In depression, it was already shown that pharmacological treatment can result in improvement in QoL (Souetre *et al.*, 1996; Aberg-Wistedt *et al.*, 2000; Kroenke *et al.*, 2001). Thus, pharmacological interventions can lift a patient's QoL, at least in OCD and depression.

In addition, improvement in QoL seems to occur independently of improvement in obsessive-compulsive symptoms. Responders and non-responders on treatment did not differ in their improvement in QoL. This seems to imply that changes in symptom severity have no bearing on improvement of QoL, and corroborates the findings of Bystritsky *et al.* (1999), who demonstrated only marginal relations between changes in symptoms and changes in QoL. Therefore, the effect of treatment on QoL does not appear to result from the effect of treatment on symptoms.

Cross-sectional studies have shown that personality dimensions may affect how patients experience their QoL (Kentros *et al.*, 1997; Hansson *et al.*, 2001). It was previously questioned whether changes in QoL would be related to these personality dimensions. Hansson *et al.* (2001) showed that especially self-directedness, one of the character dimensions of the psychobiological model of Cloninger *et al.* (1993), was able to explain most of the variance compared to the other personality dimensions in the QoL of schizophrenic patients (i.e. high self-directedness was associated with a better QoL). Consequently, we used this dimension of the psychobiological model (Cloninger *et al.*, 1993), and divided patients into high and low self-directedness. In agreement with the findings of Hansson *et al.* (2001), we expected that patients scoring high on self-directedness would show the greatest improvement in QoL. Contrary to our expectations, this was not the case. A possible explanation for this finding might be that these patients already have a high QoL and therefore have a smaller margin in which they can improve. Furthermore, the effect of treatment on self-directedness in OCD has not been investigated previously. However, in generalized anxiety disorder and major depressive disorder, it was found that self-directedness increased following treatment (Allgulander *et al.*, 1998; Richter *et al.*, 2000). If this is also true for OCD, changes in QoL would be expected to be related to changes in self-directedness following treatment, instead of to the baseline self-directedness score that we used.

Because improvement in QoL was unrelated to symptomatic improvement and the baseline self-directedness

score, the questions emerges of what is being measured with the change in QoL. It could be assumed that the change in QoL is the result of a non-specific treatment effect. Possibly, patients undergoing treatment, irrespective of the effect of that treatment, rate their QoL higher than untreated patients. The hope on change, or the experience of undertaken action to improve the present situation may be responsible for this effect. Consequently, this raises the question of how long the effect lasts. Does it sustain in all patients, or only in those patients who really have improved as a result of treatment and ultimately deteriorate in patients who have not experienced any improvement. In future studies, QoL should be measured over a larger time frame following treatment in order to address this question.

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References

- Aberg-Wistedt A, Agren H, Ekselius L, Bengtsson F, Akerblad AC (2000). Sertraline versus paroxetine in major depression: clinical outcome after six months of continuous therapy. *J Clin Psychopharmacol* **20**:645–652.
- Allgulander C, Cloninger CR, Przybeck TR, Brandt L (1998). Changes on the temperament and character inventory after paroxetine treatment in volunteers with generalized anxiety disorder. *Psychopharmacol Bull* **34**:165–166.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders*, 5th edn. Washington DC: American Psychiatric Association Press.
- Barry MM, Crosby C, Bogg J (1993). Methodological issues in evaluating the quality of life of long-stay patients. *J Mental Health* **2**:43–56.
- Bebbington PE (1998). Epidemiology of obsessive-compulsive disorder. *Br J Psychiatry* **35**(suppl.):2–6.
- Bobes J, Gonzalez MP, Bascaran MT, Arango C, Saiz PA, Bousono M (2001). Quality of life and disability in patients with obsessive-compulsive disorder. *Eur Psychiatry* **16**:239–245.
- Bystritsky A, Saxena S, Maidment K, Vapnik T, Tarlow G, Rosen R (1999). Quality-of-life changes among patients with obsessive-compulsive disorder in a partial hospitalization program. *Psychiatr Services* **50**:412–414.
- Bystritsky A, Liberman RP, Hwang S, Wallace CJ, Vapnik T, Maidment K, Saxena S (2001). Social functioning and quality of life comparisons between obsessive-compulsive and schizophrenic disorders. *Depress Anxiety* **14**:214–218.
- Cloninger CR, Svrakic DM, Przybeck TR (1993). A psychobiological model of temperament and character. *Arch Gen Psychiatry* **50**:975–990.
- Denys D, van der Wee N, van Megen HJ, Westenberg HG (2002). Double blind comparison of paroxetine and venlafaxine in obsessive-compulsive disorder. *Int J Neuropsychopharmacology* **5**(suppl.):131–132.
- Duijsens IJ, Goekoop JG, Spinhoven P, Eurlings-Spinhoven EHM (1997). Instrumenteel onderzoek: de temperament en karakter vragenlijst. *Nederlands Tijdschrift voor de Psychologie* **52**:199–202.
- Goodman WK, Price LH (1992). Assessment of severity and change in obsessive compulsive disorder. *Psychiatr Clin North Am* **15**:861–869.
- Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, *et al.* (1989). The Yale-Brown Obsessive Compulsive Scale; I. development, use and reliability. *Arch Gen Psychiatry* **46**:1006–1011.
- Grabe HJ, Meyer C, Hapke U, Rumpf HJ, Freyberger HJ, Dilling H, John U (2000). Prevalence, quality of life and psychosocial function in obsessive-compulsive disorder and subclinical obsessive-compulsive disorder in northern Germany. *Eur Arch Psychiatry Clin Neurosci* **250**:262–268.
- Hamilton A (1959). Diagnosis and rating of anxiety. *Br J Psychiatry* **3**:67–69.
- Hamilton M (1967). Development of a rating scale for primary depressive illness. *Br J Soc Clin Psychology* **6**:278–296.
- Hansson L, Eklund M, Bengtsson-Tops A (2001). The relationship of personality dimensions as measured by the temperament and character inventory and quality of life in individuals with schizophrenia or schizoaffective disorder living in the community. *Quality Life Res* **10**:133–139.
- Hollander E, Kwon JH, Stein DJ, Broatch J, Rowland CT, Himelein CA (1996). Obsessive-compulsive and spectrum disorders: overview and quality of life issues. *J Clin Psychiatry* **57**:3–6.
- Kentros MK, Terkelsen K, Hull J, Smith TE, Goodman M (1997). The relationship between personality and quality of life in persons with schizoaffective disorder and schizophrenia. *Quality Life Res* **6**:118–122.
- Koran LM, Thienemann MI, Davenport R (1996). Quality of life for patients with obsessive-compulsive disorder. *Am J Psychiatry* **153**:783–788.
- Koran LM, Leventhal JL, Fireman B, Jacobson A (2000). Pharmacotherapy of obsessive-compulsive disorder in a health maintenance organization. *Am J Health Syst Pharm* **57**:1972–1978.
- Kroenke K, West SL, Swindle R, Gilman A, Eckert GJ, Dolor R, *et al.* (2001). Similar effectiveness of paroxetine, fluoxetine, and sertraline in primary care: a randomized trial. *JAMA* **286**:2947–2955.
- Oliver J, Huxley PJ, Priebe S, Kaiser W (1997). Measuring the quality of life of severely mentally ill people using the Lancashire Quality of Life Profile. *Soc Psychiatry Psychiatr Epidemiol* **32**:76–83.
- Richter J, Eisemann M, Richter G (2000). Temperament and character during the course of unipolar depression among inpatients. *Eur Arch Psychiatry Clin Neurosci* **250**:40–47.
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavertus J, Weiller E, *et al.* (1998). The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview. *J Clin Psychiatry* **59**(suppl.):22–33.
- Souetre E, Martin P, Lozet H (1996). Quality of life in depressed patients: comparison of fluoxetine and major tricyclic antidepressants. *Int Clin Psychopharmacol* **11**:45–52.
- van Nieuwenhuizen C, Schene AH, Koeter MW, Huxley PJ (2001). The Lancashire Quality of Life Profile: modification and psychometric evaluation. *Soc Psychiatry Psychiatr Epidemiol* **36**:36–44.