

Changes in quality of life in forensic psychiatric outpatients after 6 months of community-based treatment

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ABSTRACT

Over the last few decades, quality of life (QoL) has become an important outcome measure for treatment success in general psychiatry. So far, this is not the case in forensic psychiatry, although several (treatment) models include factors related to QoL, such as the good lives model. In this study, we investigated change in QoL over a 6-month treatment period in 102 forensic outpatients with personality disorders (PDs) or traits of PDs. To this end, the extended Dutch version of the Lancashire Quality of Life Profile was used.

Objective indicators of QoL did not change during these 6 months, with one exception: Significantly more patients reported to have a helping friend at the second time point. Eight of 10 subjective indicators of QoL changed differentially for patients with different baseline levels of QoL. Those with low scores showed significant improvement on nine indicators, whereas those with high scores reported a lower QoL after 6 months on five indicators. Treatment intensity, mood and severity of PD did not mediate these changes. Subjective QoL deserves consideration as an important theoretical construct in forensic treatment and the Lancashire QoL Profile is sensitive to change during such treatment. Copyright © 2010 John Wiley & Sons, Ltd.

Introduction

Quality of life (QoL) has become an important outcome measure for treatment in general psychiatry over the last few decades, in particular for patients with chronic diseases (Fakhoury & Priebe, 2002). So far, this is not the case in forensic psychiatry (van Nieuwenhuizen, Schene, & Koeter, 2002). In this paper, we explore how QoL changes in a forensic outpatient sample during the course of a 6-month treatment period.

In forensic psychiatry, the primary treatment goal is the reduction of risk of future offending. Several objective life circumstances, such as adequate financial management, church attendance and work, have been identified as showing a preventive effect on reoffending (Bouman, de Ruiter, & Schene, in press; Ellis & Peterson, 1996; Gendreau, Goggin, & Gray, 2000; Goggin, Gendreau, & Gray, 1998; Monahan et al., 2001). Both positive subjective well-being and indicators of subjective QoL have also been found to be

related to a reduced chance of reoffending (Bouman, Schene, & de Ruiter, 2009; Draine & Solomon, 1994).

Besides these empirical indications of a relationship between objective and subjective indicators of QoL and the risk of recidivism, several theoretical (treatment) models in forensic psychiatry have included predictors related to the QoL concept. For instance, the good lives model (Ward, 2002) stipulates that every patient strives for a good and fulfilling life and that such a life diminishes the chance of reoffending in forensic psychiatric patients (Ward & Brown, 2004). In the risk-need-responsivity model of forensic treatment and risk assessment (Andrews, Bonta, & Wormith, 2006), well-being is included as a factor related to responsivity and several objective indicators are considered as risk or need factors.

QoL

According to Lehman (1983), QoL refers to a sense of well-being and satisfaction experienced by people under their current life conditions. To cover life as a whole, definitions of QoL employed in psychiatric research mostly use indicators in a range of life domains (Lehman, 1983; Oliver, Huxley, Bridges, & Mohamad, 1996; WHOQOL Group, 1998). Diener and Suh (1997) mentioned three philosophical approaches to the 'good life' resulting in three different categories of indicators; subjective, economic and social indicators. Subsequently, economic and social indicators were combined, leaving these indicators and subjective good life evaluations as the two main categories, which are now generally accepted (Farquhar, 1995; Glatzer & Mohr, 1987; Goodinson & Singleton, 1989). Subjective well-being, measured using subjective indicators of QoL, refers to the individual's cognitive and affective judgement of his entire life situation, as well as of specific life domains. Social indicators reflect a person's objective circumstances in a given cultural or geographic environment (Diener & Suh, 1997). Examples are employment,

financial situation, social contacts or intimate relationship.

Within the subjective domain, internal and external dimensions have been distinguished (van Nieuwenhuizen, 1998). The internal dimension measures domains related to personal autonomy (see Boevink, Wolf, van Nieuwenhuizen, & Schene, 1995), comprising positive and negative self-esteem, life fulfilment and life framework. The external dimension consists of life domain-specific subjective ratings, for instance, the domains living arrangements and health.

QoL in outpatients with personality disorders (PDs)

Several studies have compared the QoL of patients with PDs (APA, 2000) in community-based treatment with other outpatient populations. PD outpatients were less satisfied with their lives than outpatients with schizophrenia (Bouman, van Nieuwenhuizen, Schene, & de Ruiter, 2008). Compared with outpatients with any Axis I disorder, PD outpatients did not differ on global QoL (Trompenaars, Masthoff, van Heck, Hodiamont, & de Vries, 2006), but they were less satisfied with their life circumstances, including their financial situation, leisure activities and home environment (Masthoff, Trompenaars, van Heck, Hodiamont, & de Vries, 2006). Also, compared with the general population, PD outpatients were less satisfied with their lives in general (Narud, Mykletun, & Dahl, 2005). Co-morbidity of a PD with an Axis I disorder (APA, 2000) was associated with a lower subjective QoL compared with outpatients with either a PD or an Axis I disorder (Masthoff et al., 2006). Furthermore, patients with a cluster B PD demonstrated a lower QoL than patients with other PDs (Chen et al., 2006). More specifically, patients with antisocial PD characteristics have been found to be more dissatisfied than patients without such traits (Sareen, Stein, Cox, & Hassard, 2004). In general, patients with PD, especially cluster B PDs, tend to be less satisfied than patients without this type of disorder.

Change in QoL in (forensic) outpatients

Changes in QoL in forensic (out)patients during treatment have not been studied previously, as far as we could determine. One study examined change of QoL in general psychiatric (out)patients with PD or without a PD and used a baseline and follow-up measurement of QoL (Karterud et al., 2003). They found that QoL improved between admission and discharge for these patients, and this improvement was equally large for those without a PD. Only a quarter (28%) of this sample was male. The largest subgroup in the Karterud et al. sample consisted of patients with a borderline PD (22.1%). Very few patients had one of the other cluster B PDs (i.e. antisocial, narcissistic or histrionic).

Several factors have been identified as important mediators with regard to (change in) QoL in psychiatric patients. Severity of Axis I psychopathology, especially mood symptoms or negative affect (NA) (Ruggeri et al., 2005), has been found to influence QoL negatively (Fakhoury & Priebe, 2002). Although Karterud et al. (2003) did not find a relationship between treatment intensity and change in QoL, we believe it is an important factor to consider in relation to treatment outcome in forensic patients because treatment intensity predicted significantly lower violent recidivism rates in psychiatric patients in the MacArthur study on risk assessment of whom the majority had received both verbal therapy and medication (Monahan et al., 2001).

Research into QoL in forensic psychiatry is scarce. Furthermore, using longitudinal research, the possibility of improvement of QoL during or after treatment in patients with PDs has rarely focused on male patients with antisocial or narcissistic PDs. The current study has been undertaken to explore the possibility of using QoL as an outcome measure in forensic psychiatry, both in relation to improvement of psychopathology and in relation to diminishing the risk of reoffending.

Research questions

Over a 6-month period of community-based treatment in male forensic psychiatric outpatients:

- (1) What are the changes in objective and subjective QoL (both general and domain specific)?
- (2) Do objective and subjective indicators of QoL improve differently in patients with a full PD than in patients with PD traits?
- (3) If demonstrated, is the change in QoL related to treatment intensity?

Method

Design

In a multi-site study, we assessed 135 patients in community-based forensic psychiatric treatment on QoL at two time points (T_0 and T_1) with a 6 months interval. Participants were randomly sampled from four forensic outpatient facilities in The Netherlands. In these facilities, both patients with and without a judicial measure are treated. All patients have displayed delinquent behaviour or are at risk for (relapse into) delinquent behaviour. Most patients had been referred by the probation office (44.8%), followed by referrals from general psychiatry (29.1%). Less than half of the patients (43.7%) were referred due to a judicial measure and followed treatment mandatory. The majority of forensic psychiatric outpatients in The Netherlands are men who suffer from PDs (Derks, Hildebrand, & Mulder, 1998; Hildebrand & de Ruiter, 2004; Plemper, 2001). The sample consisted of adult male patients diagnosed with a PD or with PD traits (APA, 2000). Exclusion criteria were having a co-morbid Axis I mood, anxiety or psychotic disorder. The patients had to be in contact with the forensic treatment centre at least once a month. The sampling procedure was as follows. First, researchers computed a random number selection (using random number selection in SPSS 14.0; SPSS Inc., Chicago, IL) based on a targeted

number of 300 patients to participate in the research. Next, clinicians of the four facilities delivered a list of patients meeting inclusion criteria, who did not meet the exclusion criteria. These lists were numbered consecutively and patients with numbers in the random number selection were included in the sample. Because of a time limit for the first round of data collection (October 2003 until May 2005), a total of 214 patients were contacted by their therapist or the first author and handed a leaflet containing basic information about the study.

Subjects

A random sample of 214 patients were contacted by their therapist or the first author and handed a leaflet containing basic information about the present study: 79 did not want to participate (36.9%), and 135 agreed to participate. All gave informed consent. On average, these patients had been in treatment for almost 2 years (644 days; standard deviation (SD) = 636), ranging from a patient just entering treatment to a patient who had been in treatment for over 8 years. The average age of the 135 male patients was 37.5 years (SD = 10.4). About one-third had not finished formal education or only finished primary school. For a third of the patients, the treatment in the forensic outpatient facility was their first contact with mental health services, while two-thirds had either been previously hospitalized in a psychiatric institution or had been treated in a community-based psychiatric facility before. Clinicians who were trained in using the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; APA, 2000) diagnosed 69.6% of the patients as suffering from a PD, while 30.4% of the patients did not reach the threshold for a PD but had traits of one or more PDs. Of those with a PD, 54% obtained a diagnosis of PD Not Otherwise Specified and 33% a diagnosis of a cluster B PD (antisocial, borderline or narcissistic PD).

All 135 T_0 patients were again approached by the research staff 6 months later (T_1), at which

time 102 patients (75.6%) participated. Those participating and those not participating ($n = 33$) were compared on demographic, criminal and treatment background variables and on QoL indicators at T_0 (see also Tables 1 and 2). Although just as many responders as dropouts had ever been convicted, responders had fewer previous convictions (2.6 vs. 4.9; $F = 4.805$; $p = 0.030$) and the dropouts less often had a co-morbid Axis I disorder (10.3% vs. 28.3%; $\text{Chi-square}(1) = 3.976$; $p = 0.046$). No differences were found between responders and dropouts with regard to age, years of education, IQ, framework of treatment (court ordered or not), subjective indicators of QoL, objective indicators of QoL and overall subjective QoL at T_0 .

Measures

QoL. QoL was assessed by means of the extended Dutch version of the Lancashire Quality of Life Profile (LQoLP; van Nieuwenhuizen, Schene, & Koeter, 1998b), a structured interview which covers seven life domains: leisure and social participation (15 objective and seven subjective items); religion (two objective items); finances (eight objective and two subjective items); living arrangements (four subjective and four objective items); legal status and safety (six objective and two subjective items); family relations (five objective and three subjective items); and health (nine objective and seven subjective items).

Besides information on domain-specific QoL, the LQoLP includes an internal dimension of subjective QoL (van Nieuwenhuizen, 1998). This dimension comprises the subscales positive and negative self-esteem of the Self-Esteem Scale (Rosenberg, 1965, cited in van Nieuwenhuizen, 1998 and Oliver et al., 1996). Five positively labelled items were used to indicate positive self-esteem, for instance, 'You feel you have a number of good qualities', and five negatively phrased items were used to indicate negative self-esteem, for instance, 'You feel you do not have much to be proud of' (see Oliver et al., 1996, p. 255). For the analyses, the scores on the negative self-esteem

subscale were reversed: A high score was therefore positive and a low score was negative.

The two subscales of the Life Regard Index (Dutch adaptation by Debats, van der Lubbe, & Wezeman, 1993) were also part of the internal dimension: the Framework scale, which assesses 'the degree to which individuals can envision their lives within some meaningful perspective or have derived a set of life-goals or philosophy of life from these' (Debats, 1996, p. 14), and the Fulfilment scale, which 'measures the degree to which people see themselves as having fulfilled or as being in the process of fulfilling their framework of life-goals' (Debats, 1996, p. 14).

At the end of the interview, the patient is asked to rate his overall life quality at that time, by indicating on a 100-mm ladder how he perceives his life on a continuum ranging from *life at its worst* to *life at its best*. This is called Cantril's ladder (Cantril, 1965, cited in van Nieuwenhuizen, Schene, Boevink, & Wolf, 1998a).

The Life Satisfaction scale is used throughout the interview. The patient is asked to rate his satisfaction on the 25 subjective items of the six domains, ranging from one (*cannot be worse*) to seven (*cannot be better*). For each domain, a mean score is calculated by adding the scores per domain and dividing the total by the number of items used. Next, scores on the six subjective domains, the four internal indicators and on Cantril's ladder were divided into a low-score group ($\leq 25\%$), a medium-score group (between 25% and 75%) and a high-score category ($\geq 75\%$) at T_0 in order to explore changes in QoL ratings for these different subgroups.

Eleven objective indicators of QoL were used: One objective indicator was chosen from each of the domains of the original LQoLP (see Oliver et al., 1996; Ruggeri, Warner, Bisoffi, & Fontecedro, 2001; Ruggeri et al., 2005; van Nieuwenhuizen et al., 1998a)—having work; number of leisure activities; having a helping friend; being religious; living alone; having debts; frequency of family contact; psychiatric hospitalization in the previous year; and having been a victim of violence. The indica-

tor 'having an intimate relationship' was added because of previously found correlations with subjective QoL (see Ruggeri et al., 2001, 2005). We also added whether or not the patient had children.

The internal consistency of the Dutch version of the LQoLP was adequate to good (Cronbach's alpha ranges between 0.62 and 0.84). The 2-week test-retest reliability ranged from 0.67 to 0.90 (van Nieuwenhuizen, 1998; van Nieuwenhuizen et al., 1998a).

The Affect Balance scale (Bradburn, 1969, cited in van Nieuwenhuizen, 1998 and Oliver et al., 1996) is included in the LQoLP. This scale was used to assess NA, which can be used as an indicator of mood. Sixty-three patients (61.9%) scored high on NA, and 38.2% of the patients had low NA.

In several studies, the LQoLP has been used to measure change in QoL in psychiatric outpatients suffering from schizophrenia or other psychotic disorders, and it proved to be sensitive to change, especially the subjective indicators of QoL (Hansson & Björkman, 2007; Oliver et al., 1996; Ruggeri et al., 2005).

Treatment intensity. We used the number of treatment contacts registered for the period between T_0 and T_1 as an indicator of treatment intensity. Not every treatment facility offered the same types of treatment. However, the professional background of clinicians (i.e. clinical psychologists and psychiatrists) was comparable. Treatment of these forensic outpatients generally consists of psychotherapy, psychiatric consultation, pharmacotherapy and social assistance by a psychiatric nurse or social worker. A relapse prevention model often guides treatment and cognitive behavioural therapy is generally applied. The forms of therapy can be given either individually, in groups or in a couple format. Following the MacArthur Studies (Monahan et al., 2001), we distinguished between high and low treatment intensity, based on dichotomizing the number of treatment contacts between T_0 and T_1 using a median split (median = 21 con-

tacts). Fifty patients had fewer than 21 treatment sessions during the 6-month period (= low treatment intensity) and 52 patients had 21 or more sessions (= high treatment intensity).

Statistical analyses

Changes in objective QoL were analysed using non-parametric McNemar's tests. McNemar's test is a method used on nominal data to determine whether the row and column marginal frequencies ($b = -/+$; $c = +/-$) are equal. It is applied to 2×2 contingency tables. The formula is

$$\chi^2 = \frac{(|b - c| - 1)^2}{(b + c)}$$

(Dawson-Saunders & Trapp, 1994, p. 155). These tests were repeated in order to study change in objective indicators of QoL, while controlling for treatment intensity, PD or PD traits and for NA.

Paired samples *t*-tests were used to explore changes in each of the subjective domains and in global QoL in general and per category. The differences in change of subjective indicators of QoL and of global QoL between patients who initially (at T_0) rated their lives as low, medium or high on each of the indicators and on global QoL was assessed by comparing the slopes in change for each subgroup as measured using repeated-measures ANOVAs (see Bijleveld & van der Kamp, 1998). Partial η^2 values are reported; an effect size of 0.01 is considered small, 0.06 medium and 0.14 large (Cohen, 1988).

The relationship of treatment intensity, the presence of a PD or PD traits and of NA with change in indicators of QoL was studied using repeated-measures ANOVA for subjective indicators of QoL and for global QoL, with the three covariates. The slopes were reassessed to study the influence these variables had on change in each of the indicators. A Bonferroni correction was applied in these analyses. The threshold for significance in these analyses was set at $\alpha \leq 0.017$.

Results

Change in objective indicators of QoL

At T_0 , half of the patients had an intimate relationship and half of them had children (see Table 1). Most patients had daily or weekly contact with family members and about three-quarters of the patients had a friend who would help them if needed. Just over half of the patients lived together with others, either the partner, parents or other persons. About a third of the patients had a job, and almost 60% of the patients had financial debts (mortgages not included). Very few patients had been hospitalized because of psychiatric problems the year prior to the interview. More than half of the sample considered themselves religious. The number of leisure activities patients engaged in was on average three ($M_0 = 3.2$; $SD_0 = 0.70$; $M_1 = 3.1$; $SD_1 = 0.78$; $p = 0.32$).

Of the objective indicators of QoL, 'having a helping friend' changed significantly in a positive direction from T_0 to T_1 (McNemar: $p = 0.0075$). Patients with a high level of NA stated to have gained a helping friend more often than that they had lost one (McNemar: $p = 0.0034$); this was not the case for patients with a low level of negative affect at T_0 .

Change in subjective QoL

At T_0 and at T_1 , patients were satisfied with leisure time and social participation, living arrangements and safety (see Table 2). With finances, health and family, patients were neither satisfied nor dissatisfied. Patients scored very high on positive self-esteem and on life framework, and they assessed their life fulfilment and negative self-esteem positively. Overall, patients rated their life satisfaction positively. The subjective domain-specific QoL and patients' positive self-esteem did not change significantly between T_0 and T_1 , whereas patients' negative self-esteem, life fulfilment, life framework and overall subjective QoL all improved over the 6 months course.

Table 1: Change in objective indicators of quality of life between T₀ and T₁

Objective indicators of QoL	Total sample (N = 135)		Dropouts (N = 33)		Responders (N = 102)					
	T ₀		T ₀		T ₀		T ₁		+ → -	- → +
	P _{YES}	(n)	P _{YES}	(n)	P _{YES}	(n)	P _{YES}	(n)	P	P
Intimate relationship	48.9	(66)	39.4	(13)	52.0	(53)	52.0	(53)	17.0	18.4
Daily or weekly family contact	80.0	(108)	81.8	(27)	79.4	(81)	76.5	(78)	12.3	33.3
Having children	49.6	(67)	54.5	(18)	48.0	(49)	50.0	(51)	0	3.8
Having a helping friend**	73.3	(99)	75.8	(25)	72.5	(74)	84.3	(86)	4.1	53.6
Living with others	59.3	(80)	66.7	(22)	56.9	(58)	54.9	(56)	15.5	15.9
Work	34.1	(46)	27.3	(9)	36.3	(37)	40.2	(41)	5.4	9.2
Having financial debts	58.5	(79)	60.6	(20)	57.8	(59)	59.8	(61)	14.0	6.8
Being religious	52.6	(71)	45.5	(15)	54.9	(56)	52.0	(53)	12.5	8.7
Psychiatric hospitalization previous year	5.9	(8)	6.1	(2)	5.9	(6)	2.9	(3)	3.1	6.1
Been a victim of violence previous year	26.7	(36)	27.3	(9)	26.5	(27)	24.5	(25)	13.3	44.4

Note: Cells of T₀ and T₁ represent percentages of patients who scored positively on the indicator. The indicators are dichotomous variables for which Ps and the n are listed.

** $p = 0.0075$

QoL, quality of life; P, percentage.

Patients with a low score on Cantril's ladder at T₀ improved more than patients falling in the medium category. Patients with an initially high global QoL score rated their global QoL lower at T₁. The difference in slope for the three groups—high, medium and low QoL at T₀—was significant and large in terms of effect size (see Figure 1; within-subject contrast: $F(1, 99) = 21.51$; $p < 0.001$; $\eta^2 = 0.30$). Patients in the lower quartile improved between T₀ and T₁ on Cantril's ladder ($M_0 = 20.3$; $SD_0 = 7.4$; $M_1 = 43.9$; $SD_1 = 20.1$; $t(26) = -5.623$; $p < 0.001$) as did patients in the medium category ($M_0 = 49.3$; $SD_0 = 10.7$; $M_1 = 58.6$; $SD_1 = 17.2$; $t(47) = -4.176$; $p < 0.001$). As can be seen in Figure 1, patients in the highest quartile reported a significantly lower overall QoL at T₁ than at T₀ ($M_0 = 78.2$; $SD_0 = 8.8$; $M_1 = 71.0$; $SD_1 = 12.0$; $t(26) = 2.502$; $p = 0.019$).

Between T₀ and T₁, the satisfaction scores on four of the six life domains changed differentially for patients who were in the low, medium and high QoL category at T₀ (Table 3). There were no significant changes on the family and finances

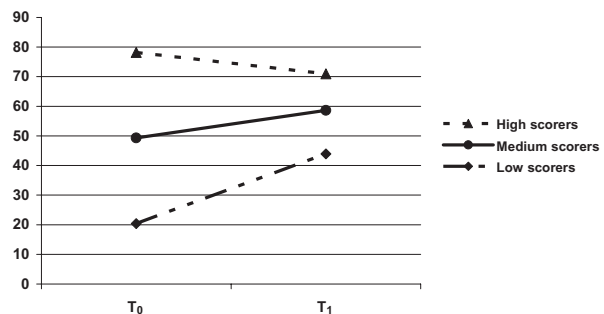


Figure 1: Change in Cantril's ladder for high, medium and low scorers at T₀

domains ($p = 0.055$ and $p = 0.082$ respectively). Generally, patients in the low category improved significantly ($p \leq 0.048$)¹ on QoL (except on finances); patients in the medium category remained stable and patients in the high category reported a significantly lower QoL on three

¹Data on changes in indicators per category (low, medium and high) are not presented here, only (largest) significance levels. Data are available from the first author.

Table 2: Subjective quality of life indicators at T₀ and T₁

Subjective QoL indicators	Total sample (N = 135)		Dropouts (N = 33)		Responders (N = 102)				95% CI of differences			
	T ₀		T ₀		T ₀		T ₁			p		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)				
Leisure time and social participation	4.8	(0.87)	4.9	(0.83)	4.8	(0.89)	4.9	(0.83)	0.952	0.343	-0.069	.197
Family	4.4	(1.45)	4.5	(1.63)	4.4	(1.40)	4.5	(1.49)	1.114	0.268	-0.097	0.344
Finances	3.8	(1.40)	3.4	(1.30)	3.9	(1.42)	3.8	(1.49)	-0.647	0.519	-0.256	0.130
Living arrangements	5.0	(1.18)	4.8	(1.35)	5.1	(1.12)	5.3	(1.10)	1.782	0.078	-0.022	0.402
Safety	5.3	(0.88)	5.4	(0.76)	5.3	(0.92)	5.4	(1.02)	1.038	0.302	-0.081	0.260
Health	4.5	(0.98)	4.6	(0.91)	4.5	(1.01)	4.6	(0.89)	1.634	0.105	-0.026	0.268
Positive self-esteem	5.8	(1.31)	5.8	(1.27)	5.8	(1.33)	6.0	(1.32)	-1.733	0.086	-0.363	0.025
Negative self-esteem ^a	4.9	(1.57)	5.0	(1.64)	4.9	(1.57)	5.3	(1.55)	-2.983	0.0036	-0.623	-0.125
Life framework	5.8	(1.10)	6.0	(0.96)	5.7	(1.13)	6.0	(1.02)	-2.935	0.0041	-0.464	-0.090
Life fulfilment	4.8	(1.26)	5.0	(1.19)	4.8	(1.28)	5.1	(1.28)	-4.265	<0.001	-0.565	-0.206
Cantrill's ladder	47.6	(22.8)	42.6	(21.4)	49.3	(23.1)	58.0	(19.4)	-4.304	<0.001	4.7	12.7

Note: *t*-Values are taken from paired samples *t*-test. Except for Cantrill's ladder, all scores were transformed into a 1–7 scale, with 1 indicating low QoL and 7 indicating high QoL.

^an = 101.

QoL, quality of life; SD, standard deviation; CI, confidence interval.

Table 3: Change in subjective quality of life indicators for high, medium and low scorers per indicator

Subjective QoL indicators	Low QoL at T ₀			Medium QoL at T ₀			High QoL at T ₀			RM ANOVA				
	T ₀	T ₁	T ₀	T ₀	T ₁	T ₀	T ₀	T ₁	Mean	(SD)	F	eta ²		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)				
Leisure time and social participation	3.5 ^d	(0.57)	4.0	(0.74)	4.9 ^r	(0.34)	4.9	(.59)	5.8g	(0.27)	5.5	(0.68)	10.03	0.17***
Family	2.4 ^f	(0.86)	3.0	(1.33)	4.5 ^q	(0.54)	4.5	(1.11)	5.9 ^s	(0.32)	5.7	(0.89)	2.99	0.06
Finances	2.0 ^e	(0.49)	2.3	(0.93)	3.9 ^s	(0.56)	3.8	(1.07)	5.7 ^f	(0.49)	5.4	(0.93)	2.57	0.05
Living arrangements	3.7 ⁱ	(0.81)	4.4	(1.19)	5.2 ^k	(0.31)	5.4	(0.87)	6.1 ^l	(0.39)	5.9	(0.71)	6.68	0.12**
Safety	4.1 ⁱ	(0.69)	4.6	(1.01)	5.5 ^o	(0.28)	5.5	(0.83)	6.2 ^h	(0.28)	5.9	(0.86)	7.14	0.13***
Health	3.3 ⁱ	(0.64)	4.0	(0.78)	4.7 ^p	(0.30)	4.7	(0.65)	5.7 ^f	(0.32)	5.5	(0.44)	8.89	0.15***
Positive self-esteem	3.8 ^e	(0.64)	4.6	(1.43)	5.9 ⁿ	(0.50)	6.0	(1.08)	7.0 ^m	(0.00)	6.9	(0.34)	8.36	0.14***
Negative self-esteem	2.7 ^e	(0.45)	3.7	(1.39)	5.0 ^r	(0.83)	5.4	(1.29)	7.0 ^b	(0.10)	6.5	(1.02)	9.80	0.17***
Life framework	4.1 ^e	(0.58)	5.2	(1.22)	6.0 ^u	(0.58)	6.0	(0.83)	7.0 ^a	(0.00)	6.8	(0.40)	19.08	0.28***
Life fulfilment	3.3 ⁱ	(0.46)	4.0	(1.09)	4.8 ^o	(0.58)	5.2	(0.83)	6.5 ^f	(0.33)	6.4	(0.70)	4.58	0.09*

Note: Low QoL = per indicator, the lowest 25% scorers at T₀. Medium QoL = per indicator, between 25% and 75% scorers at T₀. High QoL = per indicator, the highest 25% scorers at T₀ (n can vary, due to possible cut-offs). Within-subjects contrasts are displayed. df = 1.99.
^an = 17; ^bn = 20; ^cn = 23; ^dn = 24; ^en = 25; ^fn = 26; ^gn = 28; ^hn = 28; ⁱn = 29; ^jn = 30; ^kn = 33; ^ln = 35; ^mn = 37; ⁿn = 38; ^on = 39; ^pn = 43; ^qn = 46; ^rn = 48; ^sn = 50; ^tn = 52; ^un = 58; ^vn = 60.

*p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001

RM ANOVA, repeated-measures analysis of variance; SD, standard deviation; eta², partial eta²; QoL, quality of life; df, degrees of freedom.

domains (i.e. leisure time and social participation, living arrangements, and health; $p \leq 0.048$) at T_1 . Also, on the internal indicators of QoL (i.e. positive and negative self-esteem, life fulfilment and life framework), patients who initially scored lower improved more than patients in the medium category. Patients in the high category reported significantly lower levels at T_1 compared to T_0 on positive and negative self-esteem ($p \leq 0.037$). The significant effect sizes ranged from medium ($\eta^2 = 0.09$) for life fulfilment to large ($\eta^2 = 0.28$) for life framework. NA had no influence on changes in the indicators of subjective QoL or on change in global QoL which showed significant within-subject contrasts initially.

PD and change in QoL

Patients with one or more PDs and those who only had PD traits differed on one objective indicator of QoL: At T_1 , more patients with PD traits had a job compared with patients with a PD (PD = 32.4%; PD traits = 58.1%; Chi-square(1) = 5.92; $p = 0.015$). This was not the case at T_0 . We found no influence of PD on changes in objective indicators.

The presence of PD or PD traits had no significant relationship to change in indicators of subjective QoL or global QoL.

Treatment intensity and change in QoL

Treatment intensity was related to change in one objective indicator of QoL, that is, having a helping friend. Patients who received treatment with a higher intensity more often stated to have gained a helping friend between T_0 and T_1 than to have lost such a friend (McNemar: $p = 0.013$). This was not the case for patients with low treatment intensity.

Treatment intensity showed a significant relationship with change in Negative self-esteem ($F(2, 97) = 6.30$; $p = 0.014$; $\eta^2 = 0.06$). Treatment intensity was not significantly related to changes in other domains nor in global QoL.

Discussion

The idea to utilize QoL as an outcome measure in forensic psychiatric outpatient treatment is relatively new (van Nieuwenhuizen et al., 2002; Ward, 2002). Although QoL is seldom an explicit treatment target, many objective indicators of QoL are addressed during community-based treatment, such as employment or social relationships. Regarding these objective indicators, we found that most of them did not change during the 6-month treatment period. The only exception was that more patients stated to have a helping friend at the second time point. Objective indicators of QoL tend to be highly stable as has been shown in previous studies with even much longer time intervals (Oliver et al., 1996; Ruggeri et al., 2005). Furthermore, these forensic psychiatric outpatients may already be in a relatively favourable social situation as compared with, for instance, general psychiatric outpatients (see also Bouman, et al., 2008). In contrast to other studies that have demonstrated changes in domain-specific subjective indicators of QoL (Hansson & Björkman, 2007; Oliver et al., 1996; Ruggeri et al., 2005), on average our forensic outpatients' ratings of their satisfaction on the life domains did not change between T_0 and T_1 . However, patients with an initially low QoL improved significantly on satisfaction with four of the six life domains.

On most internal subjective indicators (e.g. life fulfilment and life framework), patients improved between T_0 and T_1 . Furthermore, patients who initially scored low on each distinct indicator improved significantly on all of these four indicators.

Patients with a high global QoL score at T_0 reported a lower global QoL at T_1 . Possibly, this relatively high rating at T_0 could have been tempered somewhat as a consequence of treatment. Forensic treatment aims to lead patients to take responsibility for past harmful behaviour, which may result in an increase in feelings of guilt and remorse and a concomitant less positive rating of subjective QoL. As such, the decrease in subjective

QoL is not necessarily a negative finding for some forensic outpatients. It may be a reflection of a welcome ego deflation in a person with an unrealistically positive self-image.

On the other hand, the changes in the low and high baseline QoL categories may also be related to the notion that subjective QoL is influenced by expectations, prior experiences, and perceptions of current conditions (Lehman, 1983). It could be that our forensic outpatients lowered their expectations and interpreted their situation more positively after a period in treatment, resulting in higher ratings on subjective QoL. The same mechanism could have applied to patients with an initially high score, for whom treatment made them interpret their life situation more realistically albeit less favourably (Carr, Gibson, & Robinson, 2001).

Treatment intensity had no effect on most of the changes in subjective indicators of QoL, except for a positive effect on change in negative self-esteem. Moreover, patients who had more intensive treatment gained a helping friend significantly more often. Treatment provided at the forensic outpatient facilities did not explicitly target improvement of (subjective) QoL, which might account for the lack of a relationship between treatment intensity and most indicators. Very few of the previous studies explored change in QoL while QoL was an explicit treatment target (Karterud et al., 2003; Oliver et al., 1996). Furthermore, Karterud et al. (2003) also did not find a relationship between treatment dosage and QoL. However, we did not study the effect of different types of treatment, such as medication or psychotherapy, on change in QoL. It is advisable to examine the effect of different types of treatment on QoL in future studies.

Based on previous findings (Karterud et al., 2003), PD patients were expected to have a similar change in QoL as patients with PD traits. Only one difference in change in objective QoL was found: PD patients more often gained a helpful friend over the 6-month treatment period, which was not the case for patients with PD traits. In line with Karterud et al. (2003), we did not find any

differences in terms of change in subjective indicators of QoL. The differences between patients with PD and PD traits on change in QoL seem rather small. Thus, the categorical model of PDs, which uses a specific number of criteria to classify persons as PD vs. PD traits, does not seem useful to identify groups that benefit from treatment concerning their QoL. A dimensional approach to PD (see e.g. Leibling, Jamrozinski, Vormfelde, Stahl, & Doering, 2008; Livesley, 2007) might be more useful in identifying subgroups which benefit from treatment in terms of increased QoL. Groups could be identified on the basis of personality dimensions, for instance, based on the five-factor model of personality (see e.g. Costa & McCrae, 1992). Evidence has been found for a relation of four of the five personality dimensions with health-related QoL in patients with a mood or anxiety disorder (van Straten, Cuijpers, van Zuuren, Smits, & Donker, 2007) and for three of the five dimensions in patients with breast cancer (Halim, Derksen, & van der Staak, 2001).

One of the limitations of the present study lies in the number of follow-up measurements and the interval between the measurements. We used just one follow-up measurement, 6 months after T_0 . To establish whether enduring change has taken place, repeated measurements are necessary because two measurements result in a straight line, whereas multiple measurements might result in undulations. We used a 6-month follow-up: Karterud et al. (2003) used a 1-year follow-up and Ruggeri et al. (2005) held a follow-up after 2 and after 6 years, which makes comparisons between these studies difficult. To monitor changes in subjective QoL, a shorter follow-up period and higher frequency of measurements is warranted due to the reported changes after only 6 months in our sample. However, for changes in objective indicators of QoL, longer follow-up periods are warranted.

The extended Dutch version of the LQoLP contains 151 variables and the interview takes approximately 30 minutes to complete. In order to increase efficiency, it is advisable to weigh the value added by including every item or subscale.

Most objective indicators did not change between T_0 and T_1 . Reassessing these circumstances every 6 months does not seem necessary, and these variables could therefore be skipped in short-term reassessment. However, major life events, which have been found to influence QoL (Bouman, de Ruiter, & Schene, 2009; Chan, Ungvari, Shek, & Leung, 2003; Chand, Mattoo, & Sharan, 2004; Roy, 1996), should be monitored during treatment to be able to aim interventions at coping with the events and to diminish the likelihood of a negative effect of these events on global well-being. On the other hand, regularly monitoring (changes in) global and domain-specific subjective QoL seems advisable based on the results of this study. After establishing the level of QoL at the start of treatment, and relating it to objective life circumstances, treatment targets with regard to specific indicators of QoL and overall QoL can be set. This can be done as part of a treatment plan based on the good lives model (Ward, 2002; Ward, Mann, & Gannon, 2007). This model aims at improving the achievement of human goods, which are valued aspects of human functioning and living (Ward & Brown, 2004, p. 246). The good lives model was developed as a treatment model of offender rehabilitation, which is strength based. The central assumption underlying the good lives model is that 'an individual is hypothesized to commit criminal offences because he lacks the capabilities to realize valued outcomes in personally fulfilling and socially acceptable ways' (Ward, Mann, & Gannon, 2007, p. 90). Integrating relevant and changeable indicators of QoL in treatment of forensic outpatients through a good lives model may therefore reduce the risk of reoffending.

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