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RELATIONSHIP BETWEEN MOOD RELATED DISORDERS AND QUALITY OF LIFE IN A POPULATION OF DUTCH ADULT PSYCHIATRIC OUTPATIENTS

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Our objective was to investigate explicitly the relationship between mood-related disorders (MRDs) and quality of life (QOL), while trying to overcome the limitations of earlier research. QOL scores of psychiatric outpatients with MRDs were compared with QOL scores of outpatients without MRD and a sample of the general Dutch population (GDP). QOL was assessed with the World Health Organization Quality of Life assessment instrument, long version (WHOQOL-100), and depressive symptoms were assessed with the Symptom Checklist–90 (SCL-90). Outpatients with MRD had lower scores on all aspects of the WHOQOL-100 compared with the GDP. Compared with outpatients without MRD, the outpatients with MRD scored lower on most aspects of the WHOQOL-100. Within the group with MRDs, patients with major depressive disorder (MDD) had lower QOL scores compared with patients with dysthymic disorder or adjustment disorder with depressed mood. Severity of MRD and MDD was negatively related to QOL. Comorbid personality disorders worsened QOL. Within the group with MRDs, common variance between depressive symptoms and QOL did not exceed 25%. MRDs are negatively related with QOL. Severity of MRD and comorbidity of personality disorders decrease QOL further. MRDs affect all domains and facets of QOL. The relationship found between MRDs and QOL was not caused by an overlap between the concepts depressive symptoms and QOL, shown by the relative small common variance between (depressive) symptoms and QOL. Depression and Anxiety 23:353–363, 2006. *© 2006 Wiley-Liss, Inc.*

Key words: *mood related disorders; psychiatric outpatients; quality of life; WHOQOL-100*

INTRODUCTION

Mood-related disorders (MRDs) have high rates of lifetime prevalence and recurrence [Keller, 2001; Kessler et al., 1994], form a substantial social and economic burden for society [Greenberg et al., 1993; Simon, 2003], and are projected to become the second leading cause of disability worldwide by 2020 [Murray and Lopez, 1997].

In the past few decades, effects of psychiatric disorders, such as MRD, on aspects of everyday life have become a field of growing interest in psychiatric research and treatment practice, with quality of life (QOL) being one of the main topics [Katschnig and

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Krautgartner, 2002]. The following three explanations are given in the literature:

1. Although developments in terms of diagnostics and treatments of psychiatric disorders have produced a decline in mortality and morbidity rates, accompanied by a prolongation of life, they nonetheless often fail to achieve a *restitutio ad integram*. This means that patients have to live and come to terms with (often long-lasting) disabilities due to their psychiatric (mood-related) disorder. As a consequence of this, use of the concept of QOL is growing, because classic medical end points, such as morbidity and mortality, do not fully represent the potential outcomes of medical interventions [Gladis et al., 1999; Power et al., 1999; Van Nieuwenhuizen, 1998].
2. Newly invented medical techniques, though useful, often are expensive. In times when financial resources are scarce and health care professionals are made financially accountable for their decisions, outcome measures such as QOL can be of use in making choices in treatment policies [Van Nieuwenhuizen, 1998].
3. Evaluation of new drugs and treatments of patients with MRDs requires insight into not only outcome measures, such as reduction of symptoms and occurrence of possible side effects, but also the effect they have on QOL of patients [Spilker, 1990].

The body of knowledge on the relationship between MRDs and QOL has grown, with earlier studies revealing that MRDs are associated with significant decrements in QOL [e.g., Angermeyer et al., 2002; Kuehner, 2002; Rapaport et al., 2005; Simon, 2003]. In spite of the results of earlier research, understanding the complex relationship between MRDs and QOL still remains difficult because of the following limitations: First, with regard to MRDs, QOL studies have frequently concentrated exclusively on selected study populations [e.g., Ades et al., 2002; Angermeyer et al., 2002; Black, 1999; Rapaport et al., 2005; Ritsner et al., 2005; Sierra et al., 2005; Simon, 2003; Singh et al., 2005], hampering generalizability and applicability of the results in daily practice. Second, according to the literature, QOL should be assessed in a comprehensive, culturally sensitive, subjective manner that pays attention to the relative importance of various QOL facets [Breslin, 1991; Bullinger et al., 1993; Hays et al., 1993; Jenkins et al., 1990; Kuyken et al., 1994; Laman and Lankhorst, 1994; Sartorius and Kuyken, 1994]. In many studies, however, QOL has not been assessed in accord with all these principles. Finally, assessment of both QOL and MRDs is often hampered by a substantial overlap in content between symptoms and QOL measures [Katschnig and Angermeyer, 1997].

Our aim in this study was to investigate explicitly the relationship between MRDs and QOL, while trying to overcome the limitations of the aforementioned earlier research. We did this by examining a randomly selected sample of a general population of adult psychiatric outpatients with primarily a broad spectrum of MRDs [i.e., not only major depressive disorder (MDD), but also dysthymic disorder (DD) or adjustment disorder with depressed mood (ADDM)]. Furthermore, we used the World Health Organization Quality of Life assessment instrument, long version (WHOQOL-100), which assesses QOL in a comprehensive, culturally sensitive, subjective manner that pays attention to the relative importance of various QOL facets and has a relatively small overlap in content between (depressive) symptoms and QOL facets [WHOQOL Group, 1994].

According to results of earlier research [Angermeyer et al., 2002; Kuehner, 2002; Rapaport et al., 2005; Simon, 2003], we hypothesized that patients with MRDs, in comparison with the general population, would have a worse QOL. In accordance with results found by Rapaport et al. [2005], we also hypothesized that within the total group of patients referred to the community mental health center, patients with MRDs, diagnosed according to DSM-IV criteria, would have a worse QOL when compared with people without such a diagnosis. Furthermore, we expected the worst QOL in participants with comorbidity (i.e., having an Axis I MRD diagnosis and an Axis II diagnosis according to DSM-IV), resulting in a gradual worsening of QOL scores, ranging from the best values for the general population to the worst for the psychiatric outpatients with MRDs and comorbidity. Finally, following results of earlier research with the WHO-QOL-100 [e.g., De Vries, 1996; Masthoff et al., 2005; Skevington and Wright, 2001], we hypothesized that patients with MRDs would have a worse QOL on all domains and facets of the WHOQOL-100.

MATERIAL AND METHODS

Data for our study were obtained from a group of psychiatric outpatients with MRDs. QOL outcome scores of this group were compared with QOL scores of (1) a group of psychiatric outpatients without MRDs (NMRD) and (2) a sample of the general Dutch population (GDP). Within the group of participants with MRDs, relations were examined between QOL and a number of variables (specific diagnosed mood disorder, Axis II diagnosis according to DSM-IV, and severity of psychopathology).

PSYCHIATRIC OUTPATIENTS: SETTING AND STUDY POPULATION

The data for the group of psychiatric outpatients were collected at GGZ Midden-Brabant, the community mental health center in Tilburg, the Netherlands. Approval was received from the Medical Ethical Committee of the Southern Netherlands. Participants were outpatients of Dutch ethnic origin, ages 21–50

years, referred to the center in the period from March 1, 2001, to March 1, 2002. After a random selection procedure, one-third of all potential participants entered the study. A complete description of the study was handed out to participants, and written informed consent was obtained. Exclusion criteria were inability to undergo the various verbal and written parts of the investigation protocol (interviews and questionnaires) due to severe mental illness, illiteracy, dyslexia, mental retardation, problems with sight or hearing, and cerebral damage.

GDP SAMPLE: DATA COLLECTION PROCEDURE

The reference population was taken from a pooled data set ($n = 593$) based on three Dutch general population studies collected at Tilburg University [De Vries, 1996]. Random participants were invited by telephone to enter these studies. For our study, participants ages 21–50 years were selected from this data set. This resulted in a group comprising 403 persons.

MEASURES

The psychiatric outpatients underwent two semistructured interviews (held in two separate sessions) for obtaining Axis I and Axis II diagnoses, according to DSM-IV. These interviews were administered by two psychiatrists (E. D. Masthoff and F. J. Trompenaars) trained and certified for this purpose. Both psychiatrists individually examined about half of the study sample (without overlap in patients). In addition, the outpatients were asked to complete two self-administered questionnaires for measuring QOL and psychopathological symptoms. The reference group from the GDP only completed the questionnaire for measuring QOL.

DSM-IV, Axis I diagnosis. For the Axis I diagnosis, we used the Schedules for Clinical Assessment in Neuropsychiatry [SCAN 2.1; Giel and Nienhuis, 1996; Wing et al., 1990]. The SCAN, a comprehensive, semistructured diagnostic interview developed under auspices of the WHO, assesses and classifies psychiatric disorders in adults [Giel and Nienhuis, 1996; Wing et al., 1990, 1998]. The SCAN has sufficient psychometric properties [Rijnders et al., 2000]. For some diagnostic categories of DSM-IV, data provided through the SCAN 2.1 are not sufficient (e.g., pervasive developmental disorders). When participants reported problems that seemed to belong to such a category, diagnostic criteria according to DSM-IV classification were followed.

DSM-IV, Axis II diagnosis. For the Axis II diagnosis, we used the Structured Clinical Interview for DSM-IV Axis II Personality Disorders, version 2 [SCID-II; First et al., 1997; Spitzer et al., 1990], Dutch version [Weertman et al., 2000]. The SCID-II, version 2.0, a semistructured interview covering the personality disorders included in DSM-IV Axis II disorders, has been shown to have good interrater reliability and internal consistency [Maffei et al., 1997].

Quality of life. We measured quality of life using the WHOQOL-100 [WHOQOL Group, 1994, 1998], Dutch version [De Vries and Van Heck, 1995]. The WHOQOL-100 is a generic, multidimensional measure for subjective assessment of QOL. The 100 items (which are attached to a 5-point Likert scale) are organized in 24 facets, subsumed within six domains [WHOQOL Group, 1998], and one facet measuring overall QOL and general health. In this study, we used the same four-factor structure of the WHOQOL-100 described in earlier studies [Masthoff et al., 2005; Power et al., 1998; WHOQOL Group, 1998]. High scores indicate good QOL, except for the facets pain and discomfort, negative feelings, and dependence on medication or treatments, which are negatively framed. The time of reference is the previous 2 weeks. The WHOQOL-100 has been shown to have good-to-excellent psychometric properties in populations of patients with somatic diseases [Skevington et al., 2001], as well as in populations with psychiatric disorders [Masthoff et al., 2005; Skevington and Wright, 2001].

Measurement of severity of symptoms. Actual perceived symptoms were measured with the Symptoms Checklist–90 [SCL-90; Derogatis et al., 1973], Dutch version [Arrindell and Ettema, 1986]. The 90-facet SCL is a multidimensional self-report inventory. Its questions cover major complaints reported by psychiatric outpatients, with a 5-point rating scale ranging from 1 (*not at all*) to 5 (*very much*). The questions are grouped into nine dimensions (e.g., anxiety, depression). The scores of all nine subscales can be summed. This total score, called psychoneuroticism, can be used as an indicator for the overall level of mental and somatic disfunctioning. Reliability and validity of the Dutch version of the SCL-90 are qualified as good [Nederlands Instituut voor Psychologen, 2000].

Demographic variables. Data concerning the age and sex of the psychiatric outpatients were collected. Furthermore, we asked participants whether they currently were involved in a partner relationship, lived together with at least one other person (e.g., partner, parents, child), had children, and had a job. Sick leave (reported sick at work; yes or no), and duration of sick leave (in weeks) were noted. Finally, we asked about level of education and subsequently classified patients using the following categories: *low* (i.e., no education completed at all, primary school only, individually taught, lower-level vocational training); *middle* (i.e., lower general secondary education, higher general secondary education, preuniversity education, intermediate level of vocational education); and *high* (i.e., higher level of vocational education, university).

STATISTICAL ANALYSES

We employed analyses of covariance (ANCOVAs; $P<.01$) to compare differences in QOL scores between the MRD group on the one hand, and the NMRD (individuals without MRDs) and GDP (the control group) on the other. We controlled for demographics relative to frequencies that differed significantly between the groups, and severity of anxiety symptoms (assessed with SCL-90 Anxiety subscale; no such data were available from the control sample) by entering these variables as covariates. Subsequently, we performed post hoc Scheffé comparison tests ($P<.01$). To investigate the relation between the WHOQOL-100 and the specific diagnosed MRDs, we used analyses of variance (one-way ANOVAs with post hoc Scheffé multiple comparison tests; $P<.05$). We judged differences in QOL scores between participants with a first episode of MDD and those with recurrent episodes of MDD, and between participants with and without comorbidity within DSM-IV Axis I diagnoses, using two-tailed Student's t tests ($P<.05$). We compared QOL scores of participants with MRDs with and without comorbid Axis II disorders using ANCOVAs ($P<.05$) in which severity of depressive and anxiety symptoms, assessed with the respective subscales of the SCL-90, were entered as covariates. Subsequently, we performed multiple comparison tests (post hoc Scheffé test; $P<.05$). To determine whether the presence of a personality disorder independently affected QOL in patients with a MRD, we conducted regression analyses ($P<.05$). In these analyses, in addition to the presence of a personality disorder, demographics and severity of depressive and anxiety symptoms were entered as independent variables. To investigate the relationship between QOL and severity of MRD we performed the following calculations: In both the total group of psychiatric outpatients and the MRD group, we calculated Pearson's correlations between the WHOQOL-100 and the SCL-90 dimension of depression and the psychoneuroticism score. A P value below .01 was considered significant, due to the large sample sizes. In addition, we used one-way ANOVAs with post hoc Scheffé multiple comparison tests ($P<.05$) to determine the relationship between QOL scores and severity of MDD according to DSM-IV classification codes (*light*, *moderate*, *severe*, and *with partial remission*). Due to small sample sizes, the subgroups of MDD patients with *light* and *with partial remission* severity levels were collapsed into one subgroup, connotated with the severity level *mild*. Only MDD was regarded in these analyses, because in the total MRD group, MDD is the only diagnostic category in which severity can be expressed in the classification code. The data were processed using the Statistical Package for the Social Sciences (SPSS, version 13.0 for Windows).

RESULTS

SUBJECTS

Psychiatric outpatients: Sample characteristics. Of the persons referred to the outpatient clinic of the center ($n = 3{,}892$; 40.4% male), 1,559 were potential participants (42.2% male). A total group of 438 participants entered the study. The test booklet was fully completed by 410 participants (total response rate: 93.6%; male: 41.2%; mean age: 34.8 years, $SD = 8.4$; female: 58.8%; mean age: 32.5 years, $SD = 8.2$). Axis I and Axis II diagnoses according to DSM-IV were determined for all participants (see Table 1).

Mood disorders were recorded for 110 outpatients and divided into the following diagnostic categories: MDD ($n = 79$), DD ($n = 26$), depressive disorder not otherwise specified ($n = 7$), and bipolar II disorder

TABLE 1. Axis I and Axis II diagnoses according to DSM-IV classification for the total outpatient sample ($n = 410$)

Axis I diagnosis	n[a]	Axis II diagnosis	n[a]
Pervasive developmental disorder	4	Paranoid personality disorder	4
ADDB disorder	5	Schizoid personality disorder	6
Substance-related disorder	27	Schizotypal personality disorder	2
Psychotic disorder	4	Antisocial personality disorder	23
Mood disorder	113	Borderline personality disorder	49
Anxiety disorder	73	Histrionic personality disorder	6
Somatoform disorder	9	Narcissistic personality disorder	18
Sexual disorder/gender identity disorder	9	Avoidant personality disorder	47
Eating disorder	15	Dependent personality disorder	24
Impulse control disorder	5	Obsessive–compulsive personality disorder	21
Adjustment disorder	36	Personality disorder not otherwise specified	59
Other disorder	9	Postponed diagnosis	12
Other conditions[b]	53	No diagnosis	196
No diagnosis	89		

[a]ADDB, Attention deficit and disruptive behaviour disorder. Frequencies of recorded diagnoses. Due to comorbidity (i.e., the classification of more than one diagnosis on Axis I or Axis II), the totals of recorded diagnoses per axis exceed the total number of participants.
[b]Other conditions, other conditions that may be a focus of clinical attention (mostly V codes).

($n = 1$). Three patients had both MDD and DD. Of the 79 subjects diagnosed with MDD, 49 had single-episode MDD, whereas 30 had a recurrent episode. Concerning severity, these 79 MDD episodes were further classified as *mild* ($n = 15$), *moderate* ($n = 41$), *severe* ($n = 13$), *with partial remission* ($n = 8$), and *with full remission* ($n = 2$; i.e., not actually having a major depression; thus, not regarded as having an MRD). Among the 36 classified adjustment disorders, 33 were mood related: 24 with depressed mood, 6 with anxiety and depressed mood, and 3 with mixed disturbance of emotions and conduct. In summary, of the 410 participants, 141 (34.4%; mean age 34.9 years, $SD = 8.2$). were diagnosed with one or more MRDs. The majority of these participants were female (61%). The males were, on average, older (males 36.7 years, $SD = 8.7$; females 33.6 years, $SD = 7.7$; mean difference = 3.1; $t = 2.21$; $df = 139$; $P = .029$). At time of the study, 70.2% of participants were involved in a partner relationship (lasting more than 4 weeks), 78.0% were living with at least one other person, and 51.8% had at least one child. The qualification of educational level was *low* for 47.5% of the participants, *middle* for 44.0%, and *high* for the remaining 8.5%. The majority of these participants (63.8%) had a job. However, 70.0% ($n = 63$) of them had reported sick at work. When V codes (conditions that are classified in DSM-IV as conditions that may be a focus of clinical attention), if coded on Axis I of DSM-IV classification, were not taken into account, 34 (24.1%) of the 141 participants diagnosed with an MRD had an Axis I comorbidity disorder, whereas 65 (46.1%) of these 141 participants were diagnosed with at least one Axis II personality disorder.

Of the total group of 410 participants, 269 (65.6%; mean age 32.7 years, $SD = 8.3$) did not have an MRD. Of these 269 participants, 57.6% were female, 63.6% were involved in partner relationships, 70.3% were cohabitating, and 62.1% had a least one child. The qualification of educational level was *low* for 42.4% of these participants, *middle* for 45.7%, and *high* for the remaining 11.9%. The majority of these participants (65.2%) had jobs, of which 70.7% ($n = 65$) had reported sick at work.

When comparing demographic characteristics of the MRD and NMRD participants, the only significant differences were found regarding age ($t = 2.58$, $P < .05$), and having children ($t = 2.71$, $P < .01$).

Reference group: Sample characteristics. The GDP group contained 403 participants of Dutch ethnic origin, ages 21–50 years (male: 22.3%; mean age: 37.5 years, $SD = 7.6$; female 77.7%; mean age: 37.1 years, $SD = 8.2$). The substantial differences in the sex ratio between the GDP group and the group psychiatric outpatients with MRD could bias comparisons of QOL outcome scores of both groups. To avoid this possible bias, we matched both groups for this ratio prior to analyses. For this purpose, from the 313 females belonging to the GDP group, 141 were randomly selected for further analyses. The final GDP group contained 231 participants (male 39.0%; mean age: 37.5 years, $SD = 7.6$; female 61.0%; mean age: 37.0 years, $SD = 8.3$).

FINDINGS

Psychiatric outpatients with MRD scored significantly lower ($P < .001$) on all domains of the WHOQOL-100 when compared with the scores of the GDP (reference group). On all domains and almost all facets of the WHOQOL-100, scores of psychiatric outpatients with an MRD were significantly lower than those of patients without such a disorder (NMRD). Age, for which we controlled, had an impact on the independent variables body image and appearance, dependence on medication or treatments, social relationships, and social support. Having children, which could not be controlled for in the comparisons in which the GDP group was involved, did not play a role. In the comparisons of QOL scores of the subgroups MRD and NMRD, severity of anxiety symptoms (assessed with the score on SCL-90 Anxiety subscale) only had an impact on the independent variables physical health, pain and discomfort, dependence on medication or treatments, and physical safety and security. The results are presented in Table 2.

Within the MRD group, we found some significant differences in WHOQOL-100 scores between the three largest diagnostic subgroups (MDD, DD, and ADDM). On the domains physical health and psychological health, and on some of the facets belonging to these domains, participants with MDD scored significantly lower than outpatients with DD or ADDM (see Table 3).

Comparison of WHOQOL-100 scores of participants with single-episode MDD ($n = 45$) with those of participants with a recurrent MDD ($n = 29$) revealed no significant differences on any of the domains and facets of the WHOQOL-100. Furthermore, no differences were found between scores of outpatients with and without comorbidity on Axis–I DSM-IV classification.

WHOQOL-100 scores of outpatients with MRD who were also diagnosed with one or more personality disorders ($n = 65$) were compared with those of outpatients with MRD but no diagnoses on Axis II DSM-IV classification ($n = 72$). Participants with a postponed Axis II diagnosis ($n = 4$) were left out of this particular analysis. Significant differences were found on the domains psychological health ($F = 10.96$, $P < .01$; $t = 3.69$, $P < .001$), social relationships ($F = 4.90$, $P < .05$; $t = 2.59$, $P < .05$), and environment ($F = 7.12$, $P < .01$; $t = 3.02$, $P < .01$) and on the facets positive feelings ($F = 8.96$, $P < .01$; $t = 3.38$, $P < .01$), self-esteem ($F = 8.77$, $P < .01$; $t = 3.26$, $P < .01$), body image and appearance ($F = 6.84$, $P < .05$; $t = 2.73$, $P < .01$), social support ($F = 5.65$, $P < .05$; $t = 2.84$, $P < .01$), opportunities for acquiring new information and skills ($F = 6.31$, $P < .05$; $t = 2.74$, $P < .01$), and

TABLE 2. ANCOVAs (with post hoc Scheffé) concerning domains, and facets of the WHOQOL-100 (dependent variables) and mood related disorder[a] ($n = 141$) versus GDP ($n = 231$)[b] and NMRD[c] ($n = 269$), with age and severity of anxiety symptoms (only in the comparison MRD *vs.* NMRD) as covariates

			Post hoc Scheffé comparison tests			
	ANCOVAs		MRD *vs.* GDP		MRD *vs.* NMRD	
Domains and facets of the WHOQOL-100	*F*	*P*	MD	*P*	MD	*P*
Overall QOL and GH	216.34	<.001	−6.44	<.001	−2.20	<.001
Physical health[f]	70.96	<.001	−2.82	<.001	−2.26f	<.001
Pain and discomfort[f]	118.01	<.001	4.52	<.001	1.27f	<.001
Energy and fatigue	152.96	<.001	−6.02	<.001	−2.32	<.001
Sleep and rest	105.24	<.001	−6.14	<.001	−2.40	<.001
Mobility	68.17	<.001	−4.12	<.001	−1.46	<.001
ADL	201.28	<.001	−6.60	<.001	−2.17	<.001
Medication[d,f]	120.75[e]	<.001	6.16	<.001	2.76f	<.001
Working capacity	186.99	<.001	−7.57	<.001	−3.43	<.001
Psychological health	154.34	<.001	−3.56	<.001	−1.59	<.001
Positive feelings	194.41	<.001	−5.21	<.001	−1.86	<.001
Cognitive functions[d]	151.09	<.001	−4.95	<.001	−2.02	<.001
Self esteem	163.31	<.001	−4.92	<.001	−1.96	<.001
Body image[d]	41.77[e]	<.001	−3.26	<.001	−0.65	NS
Negative feelings	248.21	<.001	6.54	<.001	2.10	<.001
Spirituality[d]	75.46	<.001	−3.87	<.001	−0.94	<.05
Social relationships	74.08[e]	<.001	−3.35	<.001	−1.11	<.01
Personal relationships	111.78	<.001	−4.34	<.001	−1.52	<.001
Social support	57.78[e]	<.001	−3.29	<.001	−0.76	NS
Sexual activity	17.55	<.001	−2.51	<.001	−1.05	<.05
Environment	131.51	<.001	−3.18	<.001	−0.83	<.001
Physical safety[d,f]	42.38	<.001	−2.50	<.001	−1.08f	<.001
Home environment	38.57	<.001	−2.62	<.001	−0.50	NS
Financial resources	36.07	<.001	−2.93	<.001	−0.41	NS
Health and social care[d]	32.84	<.001	−1.98	<.001	−0.60	NS
Information and skills[d]	89.14	<.001	−3.41	<.001	−0.76	<.05
Recreation[d]	184.88	<.001	−5.66	<.001	−1.65	<.001

[a]MRD, Participant is diagnosed with at least one mood or adjustment disorder with depressed mood, mixed anxiety and depressed mood, or mixed disturbance of emotions and conduct on Axis I according to DSM-IV classification.
[b]Maximum.
[c]NMRD, Participant is *not* diagnosed with a mood and/or adjustment disorder with either depressed mood, mixed anxiety and depressed mood, or mixed disturbance of emotions and conduct on Axis I according to DSM-IV.
[d]Medication, dependence on medication or treatments; Cognitive functions, thinking, learning, memory and concentration; Body image, body image and appearance; Spirituality, spirituality/religion/beliefs; Physical safety, physical safety and security; Health and social care, health and social care, availability and quality; Information and skills, opportunities for acquiring new information and skills; Recreation, participation in and opportunities for recreation.
[e]Age was significant ($P < 0.01$) as a covariate.
[f]Severity of anxiety symptoms (i.e., score on SCL-90 Anxiety subscale) was significant ($P < 0.01$) as a covariate.
QOL, quality of life; GH, general health; ADL, activities of daily living; MD, mean difference; NS, not significant.

participation in and opportunities for recreation ($F = 4.93$, $P < .05$; $t = 2.38$, $P < .05$) in favor of participants without a personality disorder. Severity of depressive symptoms, for which we controlled, had an impact on the domains psychological health and social relationships, and on the facets, positive feelings, self-esteem, social support, and participation in and opportunities for recreation. Severity of anxiety symptoms did not play a role. Regression analyses revealed that the presence of a personality disorder independently affected the WHOQOL-100 domains psychological health (adjusted $R^2 = 0.24$, $F = 5.42$, $P < .001$; $\beta = -0.24$, $P < .01$), and social relationships (adjusted $R^2 = 0.20$, $F = 4.54$, $P < .001$; $\beta = -0.19$, $P < .05$), and the facets positive feelings (adjusted $R^2 = 0.22$, $F = 4.88$, $P < .001$; $\beta = -0.19$, $P < .05$), self-esteem (adjusted $R^2 = 0.21$, $F = 4.7$, $P < .001$; $\beta = -0.21$, $P < .05$), body image (adjusted $R^2 = .08$, $F = 2.14$, $P < .05$; $\beta = -0.23$, $P < .01$), and social support (adjusted $R^2 = .14$, $F = 3.24$, $P < .01$; $\beta = -0.20$, $P < .05$).

Concerning the variable severity of MRDs, the following picture emerged. The SCL-90 dimension depression had several significant correlations with the WHOQOL-100 domains psychological health

TABLE 3. One-way ANOVA concerning WHOQOL-100 and type of MRD ($n = 141$)

	ANOVAs		Post hoc Scheffé comparison tests			
Domains and facets of the WHOQOL-100	*F*	*P*	Type of MRD (i)	Type of MRD (j)	MD (i–j)	*P*
Physical health	7.44	<.01	MDD	DD	−1.81	<.01
Pain and discomfort	3.52	<.05	DD	ADDM	−2.09	<.05
Sleep and rest	3.81	<.05	MDD	DD	−2.39	<.05
Mobility	3.60	<.05	MDD	DD	−2.47	<.05
Activities of daily living	4.74	<.05	MDD	DD	−1.77	<.05
Medication	3.91	<.05	MDD	ADDM	2.47	<.05
Working capacity	5.88	<.01	MDD	DD	−2.41	<.01
Psychological health	3.79	<.05	MDD	ADDM	−1.08	<.05
Positive feelings	3.58	<.05	MDD	ADDM	−1.50	<.05
Negative feelings	5.39	<.01	MDD	DD	1.34	<.05
Recreation	5.70	<.01	MDD	ADDM	−1.71	<.05

MDD ($n = 74$); DD ($n = 23$); ADDM ($n = 24$). Only domains and facets of the WHOQOL-100 with significant MD between types of MRD at the 0.05 level (two-tailed), are reported. Domains are presented in italics.

and physical health, and their facets. The strongest correlations were found with the domain psychological health ($r = -.45$) and its facets positive feelings ($r = -.44$), self-esteem ($r = -.45$) and negative feelings ($r = .50$). Thus, the maximum percentage of common variance between scores on the SCL-90 dimension depression and the WHOQOL-100 did not exceed 25%. The SCL-90 total score (psychoneuroticism) had the strongest correlations with the QOL domain physical health ($r = -.54$) and the facets energy and fatigue ($r = -.46$) and negative feelings ($r = .46$), resulting in a maximum common variance of 29.2%. The common variance for the entire group of psychiatric outpatients was higher but still did not exceed 46.2% (facet negative feelings) for SCL-90 depression. For psychoneuroticism the maximum common variance was even lower (42.3% for the domain physical health). The results are presented in Table 4.

The relationship between QOL scores and severity of MDD according to DSM-IV classification codes (*light*, *moderate*, *severe*, and *with partial remission*) is presented in Table 5. The severity levels *light* and *with partial remission* are merged into the classification *mild*. On several domains and facets of the WHO-QOL-100, major depressions with the qualification *severe* were associated with lower scores than those with the qualifications *mild* or *with partial remission*.

DISCUSSION

Adult psychiatric outpatients with MRDs had lower scores on all aspects of QOL in comparison with the general population. Compared with psychiatric outpatients without MRD, the outpatients with MRD scored lower on most aspects of the WHOQOL-100. These findings support our a priori expectations and those of earlier studies in which MRDs are regarded as disorders having far-reaching effects on QOL [Angermeyer et al., 2002; Isacson et al., 2005; Keller, 2001; Rapaport et al., 2005; Simon, 2003].

The results of our study are also in accord with earlier studies with the WHOQOL-100 among patients with a depression. For instance, Angermeyer et al. [2002] investigated the QOL of patients with depressive disorders by using the WHOQOL-100 1, 4, and 7 months after patients' discharge from hospital. They found that, compared with patients with persisting depression, the QOL of patients with depression in remission was better. However, the QOL of the latter group still remained slightly worse compared with a random sample of the general population, even 7 months after discharge. More recently, Berlim et al. [2005] found similar results in a sample of Brazilian outpatients with major depression. In this study, QOL was assessed with the WHOQOL-Bref. Bonicatto et al. [2001] used the WHOQOL-100 for the assessment of QOL in a sample of ambulatory depressed patients, who met DSM-IV criteria for current major depression. QOL was found to be significantly poorer compared with healthy persons and individuals with chronic somatic pathologies (i.e., lumbalgia due to benign processes, hypertension treated on an outpatient basis, and breast cancer in remission). Skevington and Wright [2001] examined changes in QOL in patients with moderate depression who received antidepressant medication and concluded that QOL increased significantly in the 8 weeks after the start of the antidepressant medication.

Within the MRD group, patients with MDD had lower QOL scores concerning physical and psychological health compared with patients with DD or ADDM. An explanation for this may be that MDD is a more severe manifestation of MRD than DD and ADDM [according to classification guidelines of DSM-IV; American Psychiatric Association, 1994]. If so, severity of MRD should be related to subjective QOL. The finding that SCL-90 scores on psychoneuroticism and depression (assessing severity of MRD in a subjective way) had several strong correlations with aspects of physical and psychological health, is in accordance

TABLE 4. Correlations between the WHOQOL-100 and the SCL-90 scales Depression (DEP) and Psychoneuroticism (PN) within the group psychiatric outpatients ($n = 410$) and within the subgroup psychiatric outpatients with a MRD ($n = 141$)

	Psychiatric outpatients		MRD	
Domains and facets of the WHOQOL-100	DEP	PN	DEP	PN
Overall QOL and general health	−0.56	−0.52	−0.34	−0.34
Physical health	−0.59	**−0.65**	−0.39	**-0.54**
Pain and discomfort	0.40	0.44		0.29
Energy and fatigue	−0.51	−0.52	−0.40	**−0.46**
Sleep and rest	−0.39	−0.48	−0.30	−0.42
Mobility	−0.22	−0.31		−0.29
Activities of daily living	−0.51	−0.55	−0.30	−0.39
Dependence on medication or treatments	0.44	0.48	0.28	0.39
Working capacity	−0.50	−0.51	−0.24	−0.31
Psychological health	−0.64	−0.60	**−0.45**	−0.40
Positive feelings	−0.58	−0.49	**−0.44**	−0.34
Thinking, learning, memory and concentration	−0.47	−0.51	−0.33	−0.38
Self-esteem	−0.57	−0.54	**−0.45**	−0.39
Body image	−0.27	−0.28		
Negative feelings	**0.68**	0.63	**0.50**	**0.46**
Spirituality, religion, beliefs	−0.24	−0.19		
Social relationships	−0.41	−0.40	−0.24	
Personal relationships	−0.48	−0.44	−0.29	
Social support	−0.32	−0.33		
Sexual activity	−0.21	−0.21		
Environment	−0.48	−0.50	−0.27	−0.30
Physical safety and security	−0.36	−0.42		−0.33
Home environment	−0.26	−0.26		
Financial resources	−0.25	−0.27		
Health and social care, availability and quality	−0.25	−0.28		
Opportunities for acquiring new information and skills	−0.31	−0.32		
Participation in and opportunities for recreation	−0.53	−0.49	−0.34	−0.27

All correlations are significant at the 0.01 level (two-tailed); nonsignificant correlations are not reported. Facets pain and discomfort, Negative feelings, and Dependence on medication or treatments are negatively framed. They were recoded when calculating domain scores. Domains are presented in italics. Strong correlations, discussed in the results section are in bold.

with this. These findings are also in line with those of Rapaport et al. [2005], who demonstrated a monotonic gradient between the severity of depression and QOL impairment. When the DSM-IV classification code (according to SCAN 2.1) was used as an objective indicator for severity of MDD (within the MRDs, the only diagnostic category in which severity can be expressed in the classification code), several significant differences were found in QOL scores between the respective subgroups. Following the results of an earlier study, in which depression was associated with profound and global impairments in QOL [Rapaport et al., 2005], it was expected that severity of depression affected all aspects of QOL. The fact that in our study only particular aspects of QOL were affected by severity of depression could be due to small sample sizes within the subgroups of patients with different severity levels of MDD. In summary, subjective severity of both MRD and MDD, and objective severity of MDD, were related to low subjective QOL.

Regarding the phenomenon of comorbidity, our findings show that having other psychopathology besides an MRD even worsens QOL, if this psychopathology concerns personality disorders. Comorbidity, as classified on Axis I of DSM-IV, however, had no further impact on QOL. This finding seems to contradict that of Singh et al. [2005], who found that QOL scores of patients having dual diagnosis of bipolar affective disorder and substance dependence were lower than those of patients having either diagnosis alone and healthy controls. However, regarding diagnostic characteristics, the study population of Singh et al. was not comparable to the sample we examined. In our study sample, only one patient was diagnosed with a bipolar disorder, and the number of substance-related disorders was relatively low. Furthermore, Singh et al. examined relatively stable patients (euthymic) with bipolar affective disorder in which further impairment in QOL as a result of a coinciding substance-related disorder was plausible. In our study, patients with MRDs were far from stable,

TABLE 5. One-way ANOVA concerning WHOQOL-100 and severity[a] of MDD ($n = 77$) according to DSM-IV classification codes

	ANOVAs		Post hoc Scheffé comparison tests			
Domains and facets of the WHOQOL-100	*F*	*P*	Severity MDD (i)	Severity MDD (j)	MD (i–j)	*P*
Overall QOL and general health	5.21	<.01	Mild[b]	Moderate	1.46	<.05
			Mild	Severe	2.23	<.05
Physical health	5.57	<.01	Mild	Severe	1.86	<.05
Sleep and rest	6.33	<.01	Mild	Severe	4.20	<.01
Activities of daily living	3.46	<.05	Mild	Severe	1.99	<.05
Positive feelings	4.98	<.01	Mild	Severe	2.49	<.01
Negative feelings	3.50	<.05	Mild	Severe	−1.64	<.05
Environment	8.35	<.01	Mild	Severe	2.34	<.01
			Moderate	Severe	1.46	<.05
Physical safety and security	7.81	<.01	Mild	Moderate	2.49	<.01
			Mild	Severe	2.32	<.05
Home environment	5.54	<.01	Mild	Severe	3.59	<.01
			Moderate	Severe	2.80	<.05
Financial resources	4.40	<.05	Mild	Severe	4.04	<.05
Recreation[c]	3.29	<.05	Mild	Severe	2.18	<.05

Only domains and facets of the WHOQOL-100 with significant MDs between rates of severity of MDD at the 0.05 level (two-tailed), are reported. Domains are presented in italics.

[a]Light ($n = 15$), Moderate ($n = 41$), Severe ($n = 13$), and with partial remission ($n = 8$).

[b]Mild, combination of participants with light MDD and those with MDD with partial remission ($n = 23$).

[c]Recreation, participation in and opportunities for recreation.

i,j: different groups of MDD types of which mean scores of QOL demands are compared.

which made the impairment of QOL so great that coinciding comorbidity did not additionally affect QOL in any way. Recurrence as a variable in patients with MDD was not related to QOL. A tentative explanation for this finding could be that the impact of the complex of symptoms of MDD on patients is so great that a history of MDD cannot decrease QOL further. Another explanation could be that patients with recurrent MDD fully recovered from prior depressive episodes (which in fact can be likely regarding the study setting: i.e., recently referred, ambulant patients), annihilating the impact of such episodes on QOL. Then, the present diagnosed depressive episode and its impact on QOL would be comparable to a first-episode MDD and its consequences for subjectively experienced QOL.

Although depression and QOL are distinct concepts [Rudolf and Priebe, 1999], an overlap is expected between the two [Katschnig and Angermeyer, 1997; Hansson, 1999]. However, the WHOQOL-100 is considered to have a relatively small overlap in content between (depressive) symptoms and QOL facets [WHOQOL Group, 1994]. This was also shown in our study, where the common variance within the MRD group between depressive symptoms and QOL did not exceed 25%. Although in the entire sample of psychiatric outpatients the common variance between depressive symptoms and QOL was higher, it still did not exceed 46.2%. This finding is in accordance with that of Rapaport et al. [2005], who found that although illness-specific symptom measures were consistently associated with levels of QOL, the amount of variance exhibited was not large. Besides that, MRDs were not only significantly associated with QOL aspects that they directly affect (e.g., the domain psychological health and several of its facets) but also with QOL aspects that they do not directly affect (e.g., the domain environment and several of its facets). Therefore, aspects of the mental state and the experience of mental illness should be seen as valid influences on QOL rather than impediments to its accurate measurement [Orley et al., 1998], and QOL, as a semi-independent measure for patient's perceptions of their illness [Rapaport et al., 2005].

A limitation of our study is its cross-sectional design. This hampers judgement about the direction of the relationships found between MRD and QOL. Therefore, further research should have a prospective longitudinal study design. Another question that remains open is whether the connection between personality disorders and QOL is a direct causal one, or whether personality disorders lead to a certain lifestyle that, in turn, causes poor QOL. However, experimental studies involving mood induction have shown that personality has a direct effect on emotions and that individuals respond differently to the emotional events in their lives, depending on their personalities [Larsen and Buss, 2005]. This finding suggests that the relationship between personality disorders and QOL might be a direct, causal one. A final limitation of our study is that not all the data we gathered from the psychiatric outpatients were equally available from the control

sample (e.g., several demographics, presence and severity of depressive and anxiety symptoms). Therefore, certain comparisons (e.g., comparing QOL of patients with that of the control group while controlling for depressive symptoms) cannot be made.

Because MRDs have high rates of lifetime prevalence and recurrence, and considerable impact on daily functioning, it can be expected that patients with (severe) MRDs use health care facilities in an intense way. At this time, the costs for (newly developed) psychiatric treatments for MRDs (e.g., drugs, psychotherapies, specialized clinical care) are high, whereas financial means are limited. In determining the cost-effectiveness and relative merits of different treatments of psychiatric patients with MRDs, the WHOQOL can be an outcome measure of great value. In clinical practice, the WHOQOL can be used to assess the subjectively experienced QOL of depressed patients throughout the treatment period, because apart from an alleviation of symptoms, improvement of QOL is an important goal of treatment. In this matter, not only the effects of MRDs on QOL should be considered but attention is also needed for the effects of coinciding personality disorders on QOL. Furthermore, using the WHOQOL in clinical practice as an outcome measure could imply that the relationship and the interaction between the doctor and the psychiatric patient improves due to a better understanding of how the MRD affects the patient's QOL. If QOL is used as an outcome measure in research and clinical practice in psychiatric medicine, the complex relationship between psychopathology and QOL has to be clarified in a profound way. Our study contributes to the body of knowledge on this subject, because at the same time that we assessed QOL with a psychometrically sound measure, we used solid diagnostic instruments, considered the influence of several factors (demographics, severity of depressive symptoms, the presence of personality disorders), and used a study population that consisted of a random sample of outpatients with a broad spectrum of MRDs.

We concluded that MRDs evidently have a negative relation with subjective QOL that is not caused by an overlap between the concepts depressive symptoms and QOL. In this relationship, the severity of MRD and comorbidity of personality disorders play an important role. One of the main goals during the treatment of MRD should be to improve the QOL of the patients involved. Adequate diagnosis of the presence, as well as the severity of MRDs, and paying attention to the possible presence of (comorbid) personality disorders, are of use in achieving this goal.

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