Published in final edited form as:
J Psychiatr Pract. 2005 November ; 11(6): 363–368.

Effects of Personality Disorders on Functioning and Well-Being in Major Depressive Disorder

ANDREW E. SKODOL, MD, **CARLOS M. GRILO, PhD**, **MARIA E. PAGANO, PhD**, **DONNA S. BENDER, PhD**, **JOHN G. GUNDERSON, MD**, **M. TRACIE SHEA, PhD**, **SHIRLEY YEN, PhD**, **MARY C. ZANARINI, EdD**, and **THOMAS H. MCGLASHAN, MD**
SKODOL and BENDER: Columbia University College of Physicians and Surgeons and the New York State Psychiatric Institute; GRILO and McGLASHAN: Yale University School of Medicine; PAGANO, SHEA, and YEN: Brown University Medical School; GUNDERSON and ZANARINI: McLean Hospital and the Harvard Medical School

Abstract

Background—Patients with depressive disorders have limitations in physical and emotional functioning comparable to patients with chronic medical conditions. Personality disorders (PDs) are also known to be associated with functional impairment.

Aims—To determine the effects of PDs on the functioning and well-being of patients with major depressive disorder (MDD).

Method—In the Collaborative Longitudinal Personality Disorders Study, 668 patients who met criteria for schizotypal, borderline, avoidant, or obsessive-compulsive PDs or for MDD and no PD were assessed with semi-structured interviews at baseline, 6, 12, 24, and 36 months. In this study, 151 patients who met criteria for current MDD at the 36-month follow-up were compared on the basis of the presence (n = 118) or absence (n = 33) of persistent PD. Physical and social/emotional functioning and well-being were assessed using the Medical Outcomes Study (MOS) Short-Form Health Survey (SF-36). These results were compared with those of a sample of patients with MDD seen in the mental health specialty sector who were followed in the Medical Outcomes Study.

Results—Patients with MDD and co-occurring PD had significantly more impairment on scales measuring role limitations due to emotional problems, social functioning, and general health perceptions than patients with MDD and no PD. Although patients with MDD and no PD were found to have levels of functioning and well-being that were lower in several domains than those previously reported in depressed patients recruited from mental health settings, patients with MDD and co-occurring PD were found to have much lower levels of functioning in all areas than reported samples.

Conclusions—Co-occurring PDs contribute significantly to impairment in social and emotional functioning and reduced well-being in patients with MDD.

Keywords

personality disorders; major depressive disorder; Collaborative Longitudinal Personality Disorders Study; functional impairment; well-being; Medical Outcomes Study; Medical Outcomes Study Short-Form Health Survey (SF-36)

Please send correspondence and reprint requests to: Andrew E. Skodol, MD, Director, Department of Personality Studies, New York State Psychiatric Institute, 1051 Riverside Drive, Box 129, New York, NY 10032.

In the Medical Outcomes Study (MOS), Wells et al. demonstrated that patients with depressive symptoms or disorders have limitations in physical and emotional functioning comparable to patients with chronic medical conditions, such as hypertension, diabetes, or arthritis.[1] In the 2-year observational MOS follow-up, Hays et al. followed 1,790 adult outpatients with depression, diabetes, hypertension, recent myocardial infarction, and/or congestive heart failure and found that the limitations in functioning experienced by depressed patients are as persistent over time as the limitations of patients with chronic medical illnesses.[2] Personality disorders (PDs) are generally believed to have negative effects on the course of major depressive disorder (MDD) and have been found to be associated with a poorer response to treatment[3–6] and a higher incidence of recurrence.[7,8] Severe PDs such as schizotypal and borderline PDs have also been shown to be associated with higher levels of functional impairment than MDD in the absence of a PD.[9] The purpose of this study was to determine the effects of co-occurring PDs on the functioning and well-being of patients with MDD, using the Medical Outcomes Study Short-Form Health Survey (SF-36),[10] which was the measure of functioning employed in the MOS.[1,2]

METHOD

Subjects

Participants were treatment seeking, currently treated, or recently treated patients recruited for the Collaborative Longitudinal Personality Disorders Study (CLPS), a multisite, prospective longitudinal study that examined the course and outcomes of patients with PDs compared with those of patients with MDD. A detailed description of the aims, design, and methods of the CLPS is available in a publication by Gunderson et al.[11] In all, 573 patients were assigned to one of four targeted PD groups: schizotypal PD (n = 86, 15.0% of the total), borderline PD (n = 175, 30.5%), avoidant PD (n = 158, 27.6%), or obsessive-compulsive PD (n = 154, 26.9%). In addition, 95 patients were enrolled who were diagnosed with MDD but did not have a co-occurring PD. The majority of the participants were patients recruited from clinical services affiliated with one of four recruitment sites in the Northeastern United States (at Brown, Columbia, Harvard, and Yale Universities). Most were outpatients in mental health settings (42.7%, n = 285); 12.0% (n = 80) were psychiatric inpatients, 5.4% (N = 36) were from other mental health or medical settings, and 40.0% (n = 267) were self-referred. The majority of the patients were women (63.6%, n = 425), white (75.4%, n = 504), and from Hollingshead and Redlich social classes II and III[12] (65%, n = 389 of 598). Their mean age was 32.7 years (SD = 8.1).

Participants were prescreened to determine age eligibility (18–45 years of age) and treatment status or history and to exclude patients with active psychosis, acute substance intoxication or withdrawal, or a history of schizophrenia or schizoaffective disorder. All participants signed written informed consent after the research procedures had been fully explained.

The current report is based on a sample of 151 patients from the CLPS who had current MDD at the 36-month follow-up: 118 patients with current MDD and a prospectively determined stable PD of up to 3 years' duration compared with 33 patients with current MDD and no PD. Prospectively determined stable PD psychopathology was required since it has previously been shown that a sizable proportion of PDs diagnosed at intake in this and other studies improve over time.[13,14]

Assessments

All patients were interviewed at baseline by clinically experienced raters using the Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Edition (SCID-I/P)[15] and the Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV).[16] Raters were trained

under the supervision of the senior author of the DIPD-IV (MCZ). The diagnoses of the four PDs examined in this study had good interrater and test-retest reliabilities (schizotypal: 100% agreement and kappa = 0.64, respectively; borderline: kappa = 0.68 and 0.69; avoidant: kappa = 0.68 and 0.73; obsessive-compulsive: kappa = 0.71 and 0.74).[17] Interrater kappa for the diagnosis of MDD was 0.80. In assigning patients to the study groups, diagnoses obtained from the DIPD-IV received convergent support from the results of either of two contrasting approaches to the diagnosis of PDs: the self-report Schedule for Nonadaptive and Adaptive Personality (SNAP)[18] or an independent clinician's rating on the Personality Assessment Form (PAF).[19]

Patients were re-interviewed at 6, 12, 24, and 36 months following the baseline assessment. The course of PDs was assessed using the Diagnostic Interview for DSM-IV Personality Disorders Follow-Along Version (DIPD-FAV), a modification of the DIPD-IV that allows clinicians to record the presence of traits or behaviors indicative of each criterion for the PDs for each month of the follow-along period. Reliability for the retrospective reporting on the DIPD-FAV was tested and found to be good (schizotypal: kappa = 0.78; borderline: kappa = 0.70; avoidant: kappa = 0.73; obsessive-compulsive: kappa = 0.68) at the month 6 follow-up. The presence or absence of a comorbid PD was determined by DIPD-FAV ratings indicating the patient met full or partial criteria for a PD at the 36-month follow-up. The PD positive sample included those patients who were rated at or above the diagnostic threshold for the disorder for an average of 29 of the 36 months of the follow-along period.

The course of MDD was measured using the clinician-administered Longitudinal Interval Follow-up Evaluation (LIFE).[20] The LIFE is a semi-structured interview rating system with demonstrated reliability for assessing the longitudinal course of mental disorders, including MDD.[21,22] The severity of psychopathology is quantified by the LIFE on weekly Psychiatric Status Ratings (PSRs), which are made for each mental disorder present at baseline. For MDD, PSRs are based on a 6-point scale: 1 = no symptoms; 2 = one or two symptoms of mild degree with no impairment in functioning; 3 = moderate symptoms but considerably less than meeting full criteria for diagnosis with up to moderate impairment in functioning; 4 = marked symptoms but not meeting full criteria for diagnosis with major impairment in functioning; 5 = symptoms meeting full criteria for disorder; 6 = full disorder criteria plus psychosis or extreme impairment in functioning. For the purposes of this study, patients rated as having current MDD at the 36 month follow-up were those who had had PSRs of 5 or 6 for at least the 8 consecutive weeks before the 36 month follow-up. Of the patients with current MDD at the 36 month follow-up, 76% had had a SCID-I diagnosis of MDD at baseline. and 24% had the onset of an episode of MDD during the 3-year follow-along period.

The functioning and well-being of patients in this study were measured at the 36-month follow-up using the Medical Outcomes Study SF-36, as employed by Hays et al.[2] The SF-36 is a widely used self-report instrument that measures health-related quality of life. It consists of 35 items arranged into 8 scales and 1 item that compares *overall health* in the current year to that of the prior year. Four scales measure physical health status: *physical functioning* (10 items), *physical role limitations* (4 items); *bodily pain* (2 items), and *general health perceptions* (5 items). The other four scales measure mental health status: *vitality* (4 items), *social functioning* (2 items), *emotional role limitations* (3 items), and *emotional well-being* (5 items). Items are scored either yes vs. no or using a 3-, 5-, or 6-point scale to indicate degree, frequency, or likelihood. Raw scores are transformed into 100-point scales, with higher scores indicating better health functioning. The internal consistency reliabilities of the eight scales (Cronbach's alpha) ranged from 0.75 to 0.93 and were comparable to those in the original MOS.[2]

Analyses

Effect sizes were calculated for differences between adjusted mean scores on the eight SF-36 scales for patients in the CLPS with MDD, both with (n = 118) and without (n = 33) co-occurring PDs, at the 36-month follow-up and adjusted mean scale scores from a sample of patients with MDD and unknown PD status from the mental health sector reported in the Hays et al. MOS.[2] These results are reported in terms of the effect size index "d" and interpreted according to Cohen's categories of "small" (d = 0.2), "medium" (d = 0.5), and "large" (d = 0.8) effects.[23] Regression analyses using the general linear models (GLM) procedure were conducted to predict SF-36 scale scores for the 151 patients with MDD. Predictor variables were co-occurring personality disorder, gender, ethnicity, age, education, and recruitment site.

RESULTS

Table 1 shows adjusted mean SF-36 scale scores for MDD patients with and without co-occurring PD and for the group of patients with MDD from the Hays et al. study.[2] Adjusted means were significantly lower (indicating poorer functioning or well-being) for the MDD group with co-occurring PD than for the MDD mental health sector group on all eight scales. All effects were large ($p < 0.0001$). Adjusted means for the MDD group without PD in the present study were also significantly lower than in the Hays mental health sector group, except for physical role limitations, general health perceptions, and emotional role limitations (better functioning in this domain in present study group). These differences were also large ($p < 0.0001$), but substantially smaller than for the group with co-occurring PD.

Table 2 presents the results of the regression analyses predicting functioning and well-being. The models for all functioning variables were significant at $p < 0.001$, except for vitality and emotional well-being ($p < 0.01$). Minority status (5 of 8 scales) and older age (8 of 8 scales) consistently predicted poorer functioning. In addition, co-occurring PD was a significant predictor of poor functioning or well-being among patients with MDD in the areas of emotional role limitations, social functioning, and general health perceptions.

DISCUSSION

Effect of PDs on Functioning and Well-Being

The goal of this study was to determine the effect of PDs on the functioning and well-being of patients with MDD. The results indicate that, at least in three areas tapped by the SF-36 measure (emotional role limitations, social functioning, and general health perceptions), a co-occurring PD made a significant contribution to the functional impairment and decreased sense of well-being commonly associated with MDD.

Two of the areas in which PDs had a negative impact on the functioning of patients with MDD —social functioning and emotional role limitations—are among those impairments often associated with PDs. The *social functioning* domain of the SF-36 asks questions pertaining to interference with normal social activities with family, friends, neighbors, and groups; the *emotional role limitations* section asks questions that refer to problems with work or other regular daily activities as a result of emotional problems. Impairment in interpersonal relationships and in employment has been shown to distinguish patients with PDs from patients with MDD, with patients with PDs having more impairment in these areas than those with MDD.[9] The two mental health status areas of the SF-36 that were not affected by the co-occurrence of PDs were vitality and emotional well-being. Vitality taps symptoms of loss of energy and fatigue, and emotional well-being primarily measures symptoms of depression and anxiety. Problems in these domains would logically result more from MDD than from PDs in a sample of patients with MDD. In the only other study that has examined the effects of PDs

on functioning using the SF-36, Hueston et al.[24] found that patients in a primary care setting who were "at risk" for any PD, and especially for borderline, schizoid, and dependent PDs, had poorer functional status than patients at "low risk" for PDs. They found significant differences related to the presence of PD psychopathology for general health perceptions and emotional role limitations, but not for social functioning. Patients in the Hueston et al. study were described as "at risk" for PDs, rather than as having PDs, because the PD diagnostic assessment was generated via self-report rather than clinician interview. In fact, only 70% of their sample met criteria for a PD, suggesting that there were a number of false positive diagnoses, which may account for the difference between their findings and ours in the social functioning domain.

Perhaps more surprising than their effects on social and work functioning, PDs also had an impact on the general health perceptions of patients with MDD. These SF-36 questions concerning general health perceptions inquire about attitudes towards a person's health, present and anticipated, and his or her tendency to get sick. Thus, although specific questions about limitations in daily activities and interference in activities due to physical health problems are not influenced by PDs, the overall perception of personal health may be. A recent study by Rendu et al.[25] concerning the economic impact of PDs in primary care patients also did not find that PDs had a significant impact on physical functioning itself (as measured by the SF-36), but did find that PDs had an impact through their effects on lost productivity due to disability or unemployment among patients with common mental disorders, such as anxiety and depression. Finally, a study by Frankenburg and Zanarini[26] found that patients with unremitted borderline PD were significantly more likely than remitted borderline patients to have a history of a "syndrome-like" condition (i.e., chronic fatigue, fibromyalgia, or temporomandibular joint syndrome) or a history of obesity, osteoarthritis, diabetes, hypertension, back pain, or urinary incontinence. Thus, the subjects in our study with persistent PDs may actually have experienced a number of medical illnesses, which could have had an impact on their general health perceptions.

The patients in our sample with MDD and no comorbid PD had greater levels of impairment and a decreased sense of well-being on several domains measured by the SF-36 compared with the Hays et al.[2] MOS population with MDD recruited from the mental health sector whose PD status was not assessed. This may be due to methodological differences between the MOS study, which used the Diagnostic Interview Schedule (DIS) administered by non-clinicians over the telephone to make DSM-III diagnoses of MDD, and our study, which used a clinician-administered, face-to-face SCID-I/P interview to make DSM-IV diagnoses of MDD. Differences between diagnoses based on the DIS and those based on semi-structured interviews by clinicians have been shown to be rather dramatic, with most disorders diagnosed more frequently by interviewers using the DIS.[27,28] Inclusion of less severe cases of MDD in the MOS sample could account for the greater levels of impairment observed in our study among patients with MDD and no PD. Those patients in our sample with co-occurring PDs, however, consistently had much more impairment and poorer well-being in all areas than the MOS sample. The two samples were comparable with respect to gender (64% female in the current study, 60% in the MOS) and minority composition (25% minority in the current study, 20% in the MOS), but our patients were substantially younger (mean = 33 vs. 48 years of age). In light of the fact that older age was a significant predictor of poorer functioning in all eight domains of the SF-36 in this study and has consistently been found to exert a negative effect on quality of life,[29] the impact of PDs in our sample is even more striking.

To summarize, PDs are significant contributors to the limitations in functioning of patients with MDD. The limitations due to PDs are greater with respect to emotional health than physical health functioning, although they do not occur exclusively in the emotional domain.

Older age and minority status also contribute significantly to limitations in both physical and emotional functioning in this relatively young sample of patients with MDD.

Limitations of this Study

This study had a number of limitations. First, the sample of patients with MDD and no PD was relatively small. The results, which were based on a clinical sample of treated or treatment-seeking patients in mental health settings, may not generalize to patients in medical settings or in the general population. Finally, co-occurring chronic medical illnesses, which could also have contributed to observed impairments in functioning, were not assessed at the 36-month follow-up.

Clinical Implications

This study has several potentially important clinical implications. PDs add significantly to the limitations in functioning and decreased well-being of patients with MDD. Thus, evaluation of co-occurring PDs should be an important component in the complete assessment and diagnostic profile of patients with MDD. Attention should be paid to providing treatments specifically designed to improve the social and work functioning of patients with MDD and co-occurring PD, in addition to treatments targeting depressive symptoms, in order to optimize outcomes.

Acknowledgements

This study was supported by NIMH grants MH 50837, 50838, 50839, 50840, 50850, and K05 MH 01645. This manuscript has been reviewed and approved by the Publications Committee of the Collaborative Longitudinal Personality Disorders Study.

References

1. Wells KB, Stewart A, Hays RD, et al. The functioning and well-being of depressed patients: Results from the Medical Outcomes Study. JAMA 1989;262:914–9. [PubMed: 2754791]
2. Hays RD, Wells KB, Sherbourne CD, et al. Functioning and well-being outcomes of patients with depression compared with chronic general medical illnesses. Arch Gen Psychiatry 1995;52:11–9. [PubMed: 7811158]
3. Reich JH, Green AI. Effect of personality disorders on outcome of treatment. J Nerv Ment Dis 1991;179:74–82. [PubMed: 1990074]
4. Shea MT, Widiger T, Klein MH. Comorbidity of personality disorders and depression: Implications for treatment. J Consult Clin Psychol 1992;60:857–68. [PubMed: 1460149]
5. Reich JH, Vasile RG. Effect of personality disorders on treatment outcome of Axis I conditions: An update. J Nerv Ment Dis 1993;181:475–84. [PubMed: 8103074]
6. Mulder RT. Personality pathology and treatment outcome in major depression: A review. Am J Psychiatry 2002;159:359–71. [PubMed: 11869996]
7. Ilardi S, Craighead WE, Evans DD. Modeling relapse in unipolar depression: The effects of dysfunctional cognitions and personality disorders. J Consult Clin Psychol 1997;65:381–91. [PubMed: 9170761]
8. Hart AB, Craighead WE, Craighead LW. Predicting recurrence of major depression in young adults: A prospective study. J Abnorm Psychol 2001;110:633–43. [PubMed: 11727952]
9. Skodol AE, Gunderson JG, McGlashan TH, et al. Functional impairment in patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder. Am J Psychiatry 2002;159:276–83. [PubMed: 11823271]
10. Ware JE, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36), I: Conceptual framework and item selection. Med Care 1992;30:473–83. [PubMed: 1593914]

11. Gunderson JG, Shea MT, Skodol AE, et al. The Collaborative Longitudinal Personality Disorders Study: Development, aims, design, and sample characteristics. J Personal Disord 2000;14:300–15. [PubMed: 11213788]
12. Redlich FC, Hollingshead AB, Roberts BH, et al. Social structure and psychiatric disorders. Am J Psychiatry 1953;109:729–34. [PubMed: 13050787]
13. Shea MT, Stout RL, Gunderson JG, et al. Short-term diagnostic stability of schizotypal, borderline, avoidant, and obsessive-compulsive personality disorders. Am J Psychiatry 2002;159:2036–41. [PubMed: 12450953]
14. Grilo CM, Sanislow CA, Gunderson JG, et al. Two-year stability and change of schizotypal, borderline, avoidant, and obsessive-compulsive personality disorders. J Consult Clin Psychol 2004;72:767–75. [PubMed: 15482035]
15. First, MB.; Spitzer, RL.; Gibbon, M., et al. Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Edition (SCID-I/P). New York: New York State Psychiatric Institute, Biometrics Research; 1996.
16. Zanarini, MC.; Frankenburg, FR.; Sickel, AE., et al. The Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV). Belmont, MA: McLean Hospital; 1996.
17. Zanarini MC, Skodol AE, Bender D, et al. The Collaborative Longitudinal Personality Disorders Study: Reliability of axis I and axis II diagnoses. J Personal Disord 2000;14:291–9. [PubMed: 11213787]
18. Clark, LA. Schedule for Nonadaptive and Adaptive Personality (SNAP). Minneapolis: University of Minnesota Press; 1993.
19. Shea MT, Glass DR, Pilkonis PA, et al. Frequency and implications of personality disorders in a sample of depressed inpatients. J Personal Disord 1987;1:27–42.
20. Keller MB, Lavori PW, Friedman B, et al. The Longitudinal Interval Follow-Up Evaluation: A comprehensive method for assessing outcome in prospective longitudinal studies. Arch Gen Psychiatry 1987;44:540–8. [PubMed: 3579500]
21. Solomon DA, Keller MB, Leon AC, et al. Recovery from major depression: A 10-year prospective follow-up across multiple episodes. Arch Gen Psychiatry 1997;54:1001–6. [PubMed: 9366656]
22. Mueller TI, Leon AC, Keller MB, et al. Recurrence after recovery from major depressive disorder during 15 years of observational follow-up. Am J Psychiatry 1999;156:1000–6. [PubMed: 10401442]
23. Cohen, J. Statistical power analysis for the behavior sciences. Vol. 2. New York: Academic Press; 1988.
24. Hueston WJ, Mainous AG 3rd, Schilling R. Patients with personality disorders: Functional status, health care utilization, and satisfaction with care. J Fam Pract 1996;42:54–60. [PubMed: 8537806]
25. Rendu A, Moran P, Patel A, et al. Economic impact of personality disorders in UK primary care attenders. Br J Psychiatry 2002;181:62–6. [PubMed: 12091265]
26. Frankenburg FR, Zanarini MC. The association between borderline personality disorder and chronic medical illnesses, poor health-related lifestyle choices, and costly forms of health care utilization. J Clin Psychiatry 2004;65:1660–5. [PubMed: 15641871]
27. Anthony JC, Folstein M, Romanowski AJ, et al. Comparison of the lay Diagnostic Interview Schedule and a standardized psychiatric diagnosis: Experience in eastern Baltimore. Arch Gen Psychiatry 1985;42:667–75. [PubMed: 4015308]
28. Helzer JE, Robins LN, McEvoy LT, et al. A comparison of clinical and Diagnostic Interview Schedule diagnoses: Physician reexamination of lay-interviewed cases in the general population. Arch Gen Psychiatry 1985;42:657–66. [PubMed: 4015307]
29. Kolothin RL, Crosby RD, Williams GR. Health-related quality of life varies among obese subgroups. Obesity Research 2002;10:748–56. [PubMed: 12181383]

Table 1

Adjusted mean scores on SF-36 scales of physical and mental health status

SF-36 scale	MDD with PD (n = 118) Mean (SD)	MDD without PD (n = 33Mean (SD)	MDD MH (n = 59)Mean (SD)	d*	d†
Physical functioning	65 (3)	71 (5)	79 (3)	4.67	2.10
Physical role limitations	41 (5)	49 (8)	51 (6)	1.87	0.30
Bodily pain	55 (3)	59 (5)	72 (4)	5.05	2.92
General health perceptions	46 (3)	56 (5)	57 (3)	3.67	0.26
Vitality	31 (2)	38 (4)	49 (4)	6.36	2.75
Social functioning	43 (3)	58 (5)	65 (4)	6.53	1.60
Emotional role limitations	23 (4)	47 (6)	37 (8)	2.47	1.35
Emotional well-being	41 (2)	43 (4)	53 (4)	4.24	2.50

MDD = major depressive disorder; PD = personality disorder; MH = Mental Health Specialty Sector sample (Hays et al. 1995[2])

*d, Cohen's Effect Size comparing MDD with PD to MDD MH

†d, Cohen's Effect Size comparing MDD without PD to MDD MH

J Psychiatr Pract. Author manuscript; available in PMC 2008 September 23.

Table 2

Multivariate predictors of SF-36 physical and mental health status

	Overall model		Multivariate predictors (F values)					
SF-36 scale	**F**	**R^2**	**PD**	**Gender**	**Ethnicity**	**Age**	**Education**	**Site**
Physical functioning	6.78‡	0.29	1.63	0.75	8.32†	29.08‡	2.37	2.14
Physical role limitations	5.17‡	0.23	1.00	0.77	5.36*	29.10‡	0.21	1.68
Bodily pain	5.17‡	0.23	0.43	0.12	0.87	30.09‡	0.94	2.44
General health perceptions	6.09‡	0.26	4.72*	0.17	7.00†	30.55‡	1.12	1.44
Vitality	3.38†	0.17	3.23	0.61	0.07	15.27‡	1.16	1.40
Social functioning	5.63‡	0.26	7.84†	0.97	7.32†	21.77‡	0.24	2.38
Emotional role limitations	5.34‡	0.23	11.58‡	0.12	6.30*	6.90†	1.86	7.04†
Emotional well-being	3.07†	0.16	0.56	1.20	0.78	14.21‡	6.17*	0.36

*p < 0.05;

†p < 0.01;

‡p < 0.001