J Gastroenterol 2005; 40:24–30
DOI 10.1007/s00535-004-1491-x

Journal of Gastroenterology

Defense mechanisms in inflammatory bowel disease

Thomas N. Hyphantis[1], John K. Triantafillidis[2], Sofia Pappa[1], Christos Mantas[1], Anna Kaltsouda[1], Peter Cherakakis[2], Yannis Alamanos[3], Orestis N. Manousos[4], and Venetsanos G. Mavreas[1]

[1] Department of Psychiatry, Medical School, University of Ioannina, Ioannina 45110, Greece
[2] Department of Gastroenterology, Saint Panteleimon General State Hospital, Nicea, Athens, Greece
[3] Department of Hygiene and Epidemiology, Medical School, University of Ioannina, Ioannina, Greece
[4] Department of Gastroenterology, Medical School, University of Crete, Heraklion, Crete, Greece

Background. Although psychiatric disturbances and personality features are possibly involved in inflammatory bowel disease, little attention has been given to the potential role of defense mechanisms in the formation, course, or prognosis of the disease. The purpose of the present study was to determine whether certain defense styles and ego mechanisms of defense are associated with inflammatory bowel disease, including both ulcerative colitis and Crohn's disease. ***Methods.*** Seventy-six consecutive unselected outpatients participated in the study. The sample consisted of 39 patients with Crohn's disease, 33 with ulcerative colitis, and 4 with an intermediate form of inflammatory bowel disease. The Symptom Distress Checklist (SCL-90-R), Defense Style Questionnaire (DSQ), and Hostility and Direction of Hostility Questionnaire (HDHQ) were used. ***Results.*** Crohn's disease patients presented a more immature defensive profile than ulcerative colitis patients, using a "maladaptive action" style, as well as "consumption" and "pseudo-altruism" defense mechanisms more often. These differences were statistically significant and they were independent of age, sex, educational level, disease extension, and pharmacologic treatment. A significant positive correlation was also found between disease activity and defensive profiles in both ulcerative colitis and Crohn's disease patients. In contrast, there was no statistically significant difference between ulcerative colitis and Crohn's disease patients in terms of psychiatric symptoms. ***Conclusions.*** Crohn's disease patients presented a different and more immature defensive profile than patients with ulcerative colitis. In addition, the more psychologically mature inflammatory bowel disease patients had lower rates of relapses and surgical operations, providing evidence that these aspects of personality are likely to influence the patients' adaptation to the disease.

Received: April 26, 2004 / Accepted: August 24, 2004
Reprint requests to: T.N. Hyphantis

Key words: inflammatory bowel disease, personality, crohn's disease, ulcerative colitis, ego defenses, DSQ

Introduction

Inflammatory bowel disease (IBD) is a chronic illness characterized by remission and exacerbation, often necessitating multiple operations and prolonged drug treatment. The etiology of the disease, including both ulcerative colitis (UC) and Crohn's disease (CD), is still unclear, and the role of psychological distress and personality as vulnerability factors remains controversial.[1–4] Some authors postulate that the disease has clear psychosomatic origins,[5] but their work has been discounted by many gastroenterologists and psychiatrists. Others hold the view that it is a purely physiopathologic condition,[6] while, intermediate between these two opposing viewpoints, are those who believe that IBD is a disease of multifactorial origin.[3,7,8]

According to previous reports, IBD patients share some common characteristics, such as obsessiveness-compulsiveness, neuroticism, dependency, overconscientiousness, and perfectionism.[2–4] It has also been suggested that the successful adaptation of patients with CD is more closely related to their personality than to the activity or extent of the disease.[9] The study of personality factors involved, however, is limited, and has been mostly confined to general personality traits, such as Eysenk's "neuroticism-psychoticism",[4,10] Spielberger's "trait-anxiety",[3,11] or solitary defenses.[12–14]

It is argued, though, that no mental status or clinical formulation should be considered complete without an effort to identify the patient's dominant defense mechanisms,[15] and, as Sartorius et al.[16] have also suggested, in selected instances, a return to the allegedly outdated Freudian defense mechanisms is warranted. To the best of our knowledge, there are no studies that have system-

Table 1. Disease extension

Crohn's disease		Ulcerative colitis	
Colitis	12 (30.8%)	Proctitis	8 (21.6%)
Ileitis	23 (59.0%)	Left-sided colitis	11 (29.7%)
Ileocolitis	4 (10.2%)	Pancolitis	18 (48.7%)

Table 2. Pharmacologic management of IBD patients

Drugs	*n* (%)
5-Aminosalicylates	21 (27.63%)
Steroids	9 (11.85%)
5-Aminosalicylates and steroids	29 (38.16%)
5-Aminosalicylates and purine analogues	1 (1.31%)
Steroids and purine analogues	8 (10.52%)
Combination of all the above medical drugs	5 (6.58%)
None	3 (3.95%)

atically investigated the defense styles of IBD patients. Such an approach could contribute to a better understanding of the diseases' concept as well as of the patient's ability to cope, and possibly could lead to appropriate interventions that may result in an improvement of treatment and clinical outcome.

The purpose of the present study was to determine the association of certain defense styles and ego mechanisms of defense with IBD, including both UC and CD, and to investigate the potential role of patients' personality organization in the formation of or adaptation to the disease.

Subjects and methods

A consecutive unselected sample of 76 outpatients with established IBD, who had been attending the Gastroenterology Department of Saint Panteleimon General State Hospital, Nicea, Athens, Greece, for some years participated in the study. The diagnosis of IBD was based on clinical, radiological, endoscopic, and histological evaluation.

The sample consisted of both men (38.2%) and women (61.8%), and included 39 patients with CD (51.3%), 33 with UC (43.4%), and 4 with the intermediate form of IBD (5.3%). In 40 patients (52.6%), the disease was active at the time of the research, and in 33 (43.4%) it was inactive, while 58 patients (76.3%) had undergone previous surgical therapy. Ages ranged from 18 to 60 years (mean ± SD 35.74 ± 10.93 years). None of the subjects formerly had DSM-IV axis I psychiatric disorder, none had been treated for psychiatric disorders, and none had taken any psychoactive drugs before the day they were interviewed.

Colitis and ileitis were diagnosed in the majority of the CD patients (30.8% and 59%, respectively), whereas pancolitis (48.7%) and left-sided colitis (29.7%) were the most frequent diagnoses in the UC patients (Table 1). Medical treatment had been employed in the vast majority of patients, including the use of 5-aminosalicylates and/or steroids or purine analogues (Table 2).

All the procedures followed were in accordance with the ethical standards of the hospital's responsible committee on human experimentation (World Medical Association Helsinki Declaration). After a complete description of the study was given to the subjects, all patients agreed to participate in the study, and informed consents were obtained. All patients had a personal gastroenterologist who interviewed them and provided the self-report questionnaires and who completed a study referral form concerning information on demographic variables, disease activity indexes, and information about previous surgical operations.

The following questionnaires were used:

1. The Symptom Checklist-90-R (SCL-90-R), a 90-item self-report symptom inventory designed to measure psychological symptom patterns in psychiatric and medical patients. It consists of nine primary symptom scales and it has shown good internal consistency and convergent validity in a variety of clinical research studies.[17–18] Because our study focused on personality features, it was important to include a measure of psychopathology, in order to minimize the effects of possible underlying major psychiatric disorders and to avoid misattribution of differences on the assessment measures to personality differences associated with the disease. The SCL-90-R has been validated in previous studies with medical patients and has been found to be highly reliable,[18,19] and it has been standardized in the Greek population.[20]
2. The Hostility and Direction of Hostility Questionnaire (HDHQ),[21] an attitudinal measure for a wide range of manifestations of hostility as a personality trait that reflects the subject's reaction to frustrating occurrences. The HDHQ has been used in the normal Greek population,[22] as well as in psychiatric patients and patients with somatic disease.[23]

Table 3. Factor analysis (principal components, VARIMAX rotation) of DSQ in IBD patients

	Factor 1 Maladaptive action	Factor 2 Image-distorting	Factor 3 Self-sacrificing	Factor 4 Adaptive Style
Projection	0.700			
Acting out	0.660			
Regression	0.595			
Autistic fantasy	0.567			
Projective identification	0.577			
Withdrawal				−0.577
Somatization	0.560			
Undoing	0.447			
Passive-aggressive behavior	0.507			
Consumption	0.419			
Denial	0.416			
Splitting	0.689			
Omnipotence-devaluation		0.648		
Inhibition	0.410		0.416	
Affiliation				0.372
Anticipation				0.477
Primitive idealization		0.409		
Isolation		0.654		
Pseudo-altruism			0.687	
Reaction formation			0.681	
Rejection	0.518			
Humor				0.714
Suppression				0.497
Sublimation	−0.313		0.329	
Eigenvalues	5.944	2.252	2.041	1.724
% of Variance	19.653	8.614	7.988	7.561

3. The Defense Style Questionnaire (DSQ), a rating scale that indirectly measures ego mechanisms of defense through self-appraisals of conscious derivatives.[24,25] The full version of the DSQ consists of 88 statements on a 9-point Likert-type scale that are designed to reflect behavior, suggestive of 25 defense mechanisms and four defense styles, namely, "maladaptive action", "image-distorting", "self-sacrificing", and "adaptive" styles.

The DSQ was translated into Greek after the obtaining of Dr. Bond's permission, and its features in the Greek population are now under investigation by our research team. The results so far indicate that the Greek version of the DSQ shares almost the same properties as the original. For the purposes of the present study, the DSQ scores derived from the present population sample were subjected to further principal component factor analysis, to assess the Greek version of the DSQ in this specific population. Analysis also yielded four defense styles (factors 1–4; Table 3). The first factor includes most immature defenses (projection, acting out, regression, autistic fantasy, projective identification, passive aggression, splitting, and somatization), and it is close to Bond's "maladaptive action", with the exception of splitting and somatization. The incorporation of the somatization defense in the "maladaptive" defense style may be interpreted by the nature of our sample, which consisted entirely of physically diseased patients, while "splitting", by description, could be regarded as both "image-distorting" and "maladaptive action" component. The second factor includes omnipotence-devaluation, primitive idealization, and isolation and, apart from splitting, is very close to the original "image-distorting" style. Finally, the third and fourth factors are similar to the original version's "self-sacrificing" and "adaptive" styles. Cronbach's alpha, based on the average inter-factor correlation, revealed a standardized factor alpha of 0.62, further confirming the reliability of the questionnaire. Thus, in general, the present study on the features of DSQ in this particular population indicates a close correlation between the original and the Greek versions of the DSQ.

A two-step statistical analysis was undertaken. We first computed univariate comparisons between UC and CD patients in all measured variables, including χ^2 tests for nominal data (e.g., defense styles) and univariate logistic regression analyses for continuous variables (e.g., defense mechanisms). To summarize the findings of this study, we proceeded with multivariate logistic regression analyses, in order to determine the study variables that best differentiated the UC patients from

Table 4. Defense styles used by patients with inflammatory bowel disease

	Ulcerative colitis ($n = 33$)	Crohn's disease ($n = 39$)
Maladaptive action	8 (20.5%)	14 (42.4%)*
Image distorting	13 (33.3%)	11 (33.3%)
Self-sacrificing	11 (28.2%)	13 (39.4%)
Adaptive	12 (30.8%)	13 (39.4%)

* $P < 0.05$; χ^2 test
Note: Because some subjects reported using multiple defense styles, the sum of percentages in any row may exceed 100

the CD patients, the active-phase patients from the inactive-phase, and the patients who had previously undergone surgical operations from those who had not. The use of these analyses allows for the simultaneous assessment of discriminating variables, controlling for colinearity among these variables and any possible confounding factors, and avoiding the limitations of multiple comparisons and type-I errors.[26–27] All variables that had at least five individuals in each cell were included in the analyses. Due to the small number of subjects with the intermediate form of IBD, these patients were excluded. A stepwise procedure was used to arrive at the final model.

Results

Analysis of the SCL-90-R measures revealed no statistically significant difference between UC and CD patients; thus indicating that, in our sample, UC patients did not differ from CD patients in terms of psychopathological symptoms (analysis included both univariate and multiple comparisons, and results were adjusted for age, sex, and educational level [data not shown]).

Defense styles used by individual patients in each diagnostic category are presented in Table 4. If a subject's score for each defense style was 0.5 SD above the mean on a particular factor, we considered that this subject used that corresponding defense style, because a cutoff point of 0.5 SD has been considered to provide the best discrimination here.[25] Table 4 shows that CD patients reported the use of the "maladaptive action" defense style twice as frequently as patients suffering from UC (42.4% vs 20.5%, respectively; $P < 0.05$).

Analysis based on each specific defense mechanism revealed that CD patients, in comparison with UC patients, presented higher scores for the DSQ facets of "autistic fantasy" (5.21 ± 3.31 vs 3.64 ± 2.86 respectively; $P = 0.044$), "consumption" (3.71 ± 2.0 vs 2.50 ± 1.4 respectively; $P = 0.004$) and "pseudo-altruism" (7.91 ± 1.78 vs 6.20 ± 2.09; $P = 0.028$). When all variables were taken into account, multivariate logistic regression analysis revealed that, regardless of age, sex, educational level, or disease activity, "consumption" and "pseudo-altruism" were the significant predictors of CD group membership (Table 5).

Table 6 shows the results of the investigation of the possible association between psychiatric or personality variables and specific aspects of each disease, such as disease activity or whether or not surgical operation had been done. The DSQ facets of autistic fantasy ($P = 0.029$) and anticipation ($P = 0.003$) were significant predictors of membership in the "active disease" group for both diseases. UC as well as CD patients in the active phase of the disease were more likely to use "autistic fantasy" and less likely to use "anticipation" defense mechanisms than patients in the inactive phase. As for "undergone surgerical operation", the DSQ "adaptive defense style" ($P = 0.002$) and "projection" defense mechanism ($P = 0.027$) were the significant predictors of membership in the "undergone surgical operation" group, and, as expected, CD patients were more likely to have had undergone a surgical operation than UC patients ($P = 0.009$). UC as well as CD patients who exhibited an impaired and less adaptive defense style and/or higher values for the "projection" defense mechanism were more likely to have undergone various surgical operations, regardless of the state of their psychopathology or their age, sex, and educational level.

Finally, disease extension and medical treatment were not found to be statistically significantly correlated to any psychiatric or personality variable studied.

Discussion

The aim of the present study was to investigate the possible association between Crohn's disease (CD), ulcerative colitis (UC) and certain aspects of defense styles and ego mechanisms of defense. Our findings offer preliminary evidence that the study of defenses may contribute to our better understanding and to more efficient intervention in this group of patients.

Table 5. Defense mechanisms associated with Crohn's disease

	Univariate logistic analysis		Multivariate logistic analysis	
	Odds ratio (95% CI)	*P*	Odds ratio (95% CI)	*P*
Passive-aggressive	1.123 (0.834–1.513)	NS		
Projection	1.148 (0.805–1.639)	NS		
Regression	1.148 (0.932–1.414)	NS		
Inhibition	1.008 (0.779–1.304)	NS		
Projective identification	1.077 (0.878–1.320)	NS		
Acting out	1.022 (0.788–1.325)	NS		
Withdrawal	0.987 (0.830–1.175)	NS		
Fantasy	1.168 (1.004–1.358)	0.044		
Rejection	1.301 (0.978–1.731)	0.049		
Consumption	1.466 (1.097–1.959)	0.010	1.813 (1.220–2.694)	0.003
Undoing	1.203 (0.927–1.562)	NS		
Omnipotence	1.043 (0.775–1.404)	NS		
Denial	1.037 (0.775–1.388)	NS		
Splitting	1.024 (0.802–1.308)	NS		
Primitive idealization	0.962 (0.789–1.173)	NS		
Isolation	0.939 (0.676–1.304)	NS		
Pseudo-altruism	1.657 (1.151–2.660)	0.028	1.511 (1.061–2.153)	0.022
Reaction formation	1.121 (0.817–1.540)	NS		
Humor	1.012 (0.802–1.276)	NS		
Affiliation	1.038 (0.849–1.269)	NS		
Sublimation	0.929 (0.808–1.068)	NS		
Suppression	1.013 (0.780–1.316)	NS		
Task orientation	1.048 (0.856–1.284)	NS		
Anticipation	1.016 (0.789–1.309)	NS		

Univariate and multivariate Logistic regression analyses were performed, with the dependent variable being IBD (UC vs CD) and independent variables being the defensive styles and the ego mechanisms of defense scales, adjusted for age, sex, educational level, disease activity, and whether or not surgical operation had been undergone. The predictive values were calculated based on the probability of being in the CD group, and the cutoff value between CD and UC was 0.500. None of the psychopathology (SCL-90-R) or hostility (HDHQ) scales participated in the final multivariate regression equation, which correctly classified 64.8% of the cases, with a Cox and Snell R^2 value of 0.388

Table 6. Personality factors associated with inflammatory bowel disease facets

Disease activity	Odds ratio (95% CI)	*P*
DSQ "autistic fantasy" defense	1.821 (1.688–1.980)	0.029
DSQ "anticipation" defense	0.587 (0.415–0.830)	0.003
Surgical operation	**Odds ratio (95% CI)**	***P***
DSQ "adaptive" style	0.861 (0.781–0.949)	0.002
DSQ "projection" defense mechanism	2.076 (1.088–3.960)	0.027
Disease (CD vs UC)	0.126 (0.027–0.589)	0.009

Table data show results of multivariate logistic regression analyses, with dependent variables being "disease activity" (inactive vs active; the predictive values were calculated based on the probability of the disease being "active") and "surgical operation" (patients who had not previously undergone surgerical operation vs patients who had previously undergone such an operation for treatment of IBD; the predictive values were calculated based on the probability of being operated). The independent variables were the psychopathology scales (SCL-90-R), hostility features (HDHQ), defense styles (DSQ), and ego mechanisms of defense scales (DSQ), adjusted for age, sex, and educational level. Only statistically significant results are shown. The regression equations correctly classified 69.1% and 83.1% of the cases, respectively, with Cox and Snell R^2 values of 0.201 and 0.316, respectively

The study of defense mechanisms in our sample revealed that CD patients reported using the "maladaptive action" defense style more often than patients with UC. By description, maladaptive action indicates the subjects' inability to deal with their impulses by taking constructive action on their own behalf.[25] Thus, for example, the "regressing" person requires someone to take over and do something for him or her, the "projecting" person puts the blame and responsibility on others instead of accepting his or her own impulses, and the

passive-aggressive person acts to provoke anger in the person with whom he or she is related. Such behaviors give rise to problems in patients' relationships with significant others, including their relationships in social and medical care environments.

Focusing on specific defenses, our results show that CD patients use "consumption" and "pseudo-altruism" twice as frequently as patients with UC. "Consumption" is regarded as a tendency to repetitive seeking of oral satisfaction (eating, drinking, smoking, excessive demands etc.) and "pseudo-altruism" (in contrast with "true altruism", which is a high adaptive defense mechanism) is a component of the "self-sacrificing", "martyr type", and "do-gooder" style, usually reflecting a need to perceive one's self as being kind, helpful to others, and never angry.[25]

"Pseudo-altruism", along with the denial of hostility, which is indicated by the absolute absence of any of the hostility features measured within any analysis carried out, may result in communication problems, as well as in the slackening of self-care. Besides, it has been pointed out that patients with chronic physical illness who are more concerned about the needs of others than their own tend to neglect their own self-care.[26]

It is noteworthy that the above differences between CD and UC patients occurred regardless of disease activity, in contrast with a previous report, where a breakdown of defense mechanisms was correlated to the active phase of the disease.[28] Nevertheless, in our study, during the active phase of the disease, both CD and UC patients were more likely to use immature defenses, such as autistic fantasy, and less likely to use mature ones, such as anticipation. Autistic fantasy (a mechanism characterized by excessive daydreaming instead of problem-solving) and anticipation (a mature mechanism characterized by a realistic consideration of alternative responses or solutions to problem-solving) are shown in opposite ways in the active phase of the disease. In addition, patients who have had multiple operations are more likely to adopt immature defenses, such as projection, rather than adopting a mature adaptive defensive style. It seems that the more psychologically mature patients tend to avoid relapses or even surgery, probably because they are able to cope more appropriately with their inner drives, stressful life events, and adherence to treatment. It could be suggested that patients' maladaptive actions reflect an inability to take control of their lives and manage the self-care required for this chronic medical illness (such as diet, exercise, compliance with medication, and medical advice). In accordance with our findings are the results of previous research, where the successful adaptation of patients with CD was more closely related to their personality than to the activity or extent of the disease.[9]

Finally, in our study, UC patients did not display a psychopathological profile different from that in CD patients, when defenses were taken into account. This finding must be interpreted with caution, taking into account that the SCL-90 estimates dimensional symptoms and state symptomatology rather than psychiatric disorders. Nonetheless, the results of the studies in the field remain controversial. Many reports suggest that patients with CD seem to suffer more often from overt psychiatric disturbances than chronically ill control patients, while these reports failed to document a similar association for UC.[1–3,8] On the other hand, Magni et al.[29] found that UC patients scored significantly higher on all SCL-90 subscales when compared with a matched control group. Somehow or other, the results of the present study may show the possible role of defense mechanisms in the formation of the psychopathology in CD.

In conclusion, our results suggest that defense mechanisms, though not necessarily etiologically associated with the pathogenesis of IBD, are probably crucially involved in the patients' adaptation to chronic gastrointestinal disease. Attention, understanding, and intervention in the patients' inner psychological structure could help in the management of those patients showing immature coping, and could offer important help in assisting the patient to adjust to the unpleasant symptoms and to improve compliance with treatment.

The results of the present study are suggestive and not conclusive. Despite the fact that defense mechanisms are regarded as relatively stable aspects of personality, further longitudinal studies are warranted in order to confirm our findings. Nevertheless, we would consider the study of ego mechanisms of defense as an alternative and additional approach to the usual psychiatric methods, for the investigation of psychological factors affecting physical conditions and diseases, because such a study provides more accurate and detailed information about each patient's personality profile. It could help us, also, to formulate creative hypotheses and to design investigations that are likely to broaden our understanding about illness.

References

1. Andrews H, Barczak P, Allan RN. Psychiatric illness in patients with inflammatory bowel disease. Gut 1987;28:1600–4.
2. Heltzer JE, Chammas S, Norland C, Stillings WA, Alpers DH. A study of the association between Crohn's disease and psychiatric illness. Gastroenterology 1984;86:324–30.
3. Heltzer JE, Stillings WA, Chammas S, Norland CC, Alpers DH. A controlled study of the association between ulcerative colitis and psychiatric illness. Dig Dis Sci 1982;27:513–8.
4. Robertson DAF, Ray J, Diamond I, Edwards JG. Personality profile and affective state of patients with inflammatory bowel disease. Gut 1989;30:623–6.

5. Sperling M. Symposium on the disturbances of the digestive tract, II: inconscious phantasy life and object-relationships in ulcerative colitis. Int J Psychoanal 1960;41:450–5.
6. Cantor DS. Crohn's disease and psychiatric illness. Gastroenterology 1984;87:478–9.
7. Drossman DA. Psychosocial factors in inflammatory bowel disease. In: Kirsner JB, Shorter RG, editors. Inflammatory bowel disease. Baltimore: Williams and Wilkins; 1995.
8. North CS, Clouse RE, Spitznagel EL, Alpers DH. The relation of ulcerative colitis to psychiatric factors: a review of findings and methods. Am J Psychiatry 1990;147:974–81.
9. Gazzard BG, Price HL, Libby GW, Dawson AM. The social toll of Crohn's disease. BMJ 1978;2:1117–9.
10. Addolorato G, Capristo E, Stefannini GF, Gasbarrini G. Inflammatory bowel disease: a study of the association between anxiety and depression, physical morbidity and nutritional status. Scand J Gastroenterol 1997;32:1013–21.
11. Tocci A, Lepre L, Liotta G, Mazzoni G, Costa G, Taborra L, et al. Familial and psychological risk factors of ulcerative colitis. Ital J Gastroenterol Hepatol 1997;29:395–8.
12. Engel CC, Walker EA, Katon WJ. Factors related to dissociation among patients with gastrointestinal complaints. J Psychosom Res 1996;40:643–53.
13. Küchenhoff J. Defense mechanisms and defense organization: their role in the adaptation to the acute stage of Crohn's disease. In: Hentschel U, Smith GSW, Ehlecs W, editors. The concept of defense mechanisms. New York Berlin Heidelberg Tokyo: Springer; 1993. p. 412–23.
14. Porcelli P, Leoci C, Guerra V, Taylor GJ, Bagby M. A longitudinal study of alexithymia and psychological distress in inflammatory bowel disease. J Psychosom Res 1996;41:569–73.
15. Vaillant GE. Ego mechanisms of defense. A guide for clinicians and researchers. Washington, DC: American Psychiatric; 1992. p. 29 and p. 139–40.
16. Sartorius N, Jablensky A, Regier DA. Sources and traditions of classification in psychiatry. Toronto: Hogrefe and Huber; 1990. p. 2.
17. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L. The Hopkins symptom checklist (HSCL): a self-report symptom inventory. Behav Sci 1974;19:1–15.
18. Derogatis LR. SCL-90-R: administration, scoring, and procedure manual. 3rd ed. Minneapolis: National Computer Systems; 1994.
19. Ciechanowski PS, Wayne JK, Russo JE. Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. Arch Intern Med 2000;160:3278–85.
20. Donias S, Karastergiou A, Manos N. Standardization of the symptom checklist-90-R rating scale in a Greek population (in Greek with English abstract). Psychiatriki 1991;2:42–8.
21. Caine TM, Foulds GA, Hope K. Manual of hostility and direction of hostility questionnaire. London: University of London Press; 1967.
22. Economou M, Angelopoulos NV. Dysthymic symptoms, hostility and scholastic achievement in a group of high school students. J Educ Psychol 1989;9:331–7.
23. Angelopoulos NV, Mantas C, Dalekos GN, Vasalos K, Tsianos EV. Psychiatric factors in patients with ulcerative colitis according to disease activity. Eur J Psychiatr 1996;10:87–99.
24. Bond M, Gardner ST, Christian J, Sigal JJ. Empirical study of self-rated defense styles. Arch Gen Psychiatry 1983;40:333–8.
25. Bond M. An empirical study of defense styles: the defense style questionnaire. In: Vaillant GE, editor. Ego mechanisms of defense: a guide for clinicians and researchers. Washington DC: American Psychiatric; 1992. p. 137.
26. Lane JD, McCaskill CC, Williams PG, Parekh PI, Feinglos MN, Surwit RS. Personality correlates of glycemic control in type 2 diabetes. Diabetes Care 2000;23:1321–5.
27. Walker EA, Gelfand MD, Gelfand AN, Gelfand AN, Creed F, Katon WJ. The relationship of current psychiatric disorder to functional disability and distress in patients with inflammatory bowel disease. Gen Hosp Psychiatry 1996;18:220–9.
28. Federschmidt H, Huse-Kleinstoll G. Correlation in Crohn disease between psychiatric findings and site and kind of inflammatory extension. Psychother Psychosom Med Psychol 1995;45:403–13.
29. Magni G, Bernasconi G, Mauro P, D'Odorico A, Sturniolo GC, Canton G, et al. Psychiatric diagnosis in ulcerative colitis. A control study. Br J Psychiatry 1991;158:413–5.