

## PSYCHOLOGICAL FACTORS IN IRRITABLE BOWEL SYNDROME

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### Abstract

**Objective:** The role of psychological factors in irritable bowel syndrome (IBS) is a matter of debate. The prevalence of psychiatric disorders is high in IBS patients. Positive response to antidepressant therapy and presence of family history of depression in IBS patients have led speculations whether this syndrome might be regarded as an affective spectrum disorder. In this study we tried to examine the possible association of IBS with affective spectrum disorders.

**Method:** Forty IBS patients from gastroenterology outpatient clinics of a university hospital and state hospital, 32 controls with inflammatory bowel disease and 34 healthy hospital workers were included in the study. Psychiatric interviews were done using SCID-NP (Structured Clinical Interview for DSM-Non-patients) and psychological factors were assessed by the SCL-90-R (Symptom Checklist-90-Revised), the Beck Depression Inventory, the Beck Anxiety Scale and the Hamilton Rating Scale for Depression. Family histories were obtained by FH-RDC (Family History Research Diagnostic Criteria). All groups were matched for sociodemographic variables.

**Results:** The prevalence of psychiatric disorders and mood disorders was higher in the IBS group than the control groups. Also IBS group rated higher on anxiety and depression scales than the other groups, where the differences were statistically significant. Presence of positive family history for mood disorders was higher in the IBS group.

**Conclusion:** These results support the hypothesis that IBS might be linked to affective spectrum disorder. Psychiatric assessment and therapy might be useful in the course of irritable bowel syndrome.

**Key words:** Irritable bowel syndrome, mood disorders, depression, anxiety

### INTRODUCTION

Irritable bowel syndrome (IBS) is a common condition seen in gastroenterology clinics and affects 8-26% of general population (Drossman et al. 1988, Kettel et al. 1992, Lydiard et al. 1993). At 1978, Manning identified four signs most widely seen in IBS patients. These are abdominal disten-

tion, pain relieving by bowel movements, increasing frequency of bowel movements with the beginning of pain. These symptoms are called Manning Criteria. These criteria make the clinical IBS diagnosis possible without hindering of a severe underlying organic disorder (Jones 1989, Talley et al. 1990, Maxton et al. 1991). Investigators studying the relationship between irritable bowel syndrome and psychiatric disorders found that the prevalence of psychiatric disorders were high in IBS patients (Wender and Kalm 1983, Langeluddecke 1985, Bergeron and Montol 1985, Ford et al. 1987, Whitehead et al. 1988, Kumar et al. 1990, Walker et al. 1990a, Walker et al. 1990b, Lydiard et al. 1993, Garakani et al. 2003, Hudson et al. 2003). Drossmann (1988) reported that there was physical or sexual trauma history in childhood or afterwards in 44% of patients with functional gastrointestinal complaints. Svedlund et al (1985) compared 101 patients with IBS to 677 healthy women and reported that women with IBS showed more anxiety. It was emphasised that the most frequent symptoms were fatigue, anger, sadness, sleep disorders, mild depressive symptoms, obsessive compulsive symptoms, ritual behaviours, decreased libido and decreased appetite, and only few patients had not signs of affective disorder. It has usually been accepted that an anxious or depressed mood may increase the severity of IBS symptoms either because individuals who are more anxious and depressed experience a given level of physical symptoms as more severe, distressing, and disabling or because the physiological changes that accompany mood disorders have a direct influence on gastrointestinal function, increasing the objective experience of IBS symptoms, though there may also be reports finding no association between the severity of depression and reported IBS symptoms (Crane et al. 2003).

Whitehead et al. (2002) note that comorbidity of IBS with other functional gastrointestinal disorders is high and may be caused by shared pathophysiological mechanisms such as visceral hypersensitivity. Psychiatric disorders, especially major depression, anxiety, and somatoform disorders, occur in up to 94%. The nongastrointestinal non-psychiatric disorders with the best-documented association are fibromyalgia (median of 49% have IBS), chronic fatigue syndrome (51%), temporo-

mandibular joint disorder (64%), and chronic pelvic pain (50%) (Whitehead et al. 2002).

Swiatkowski and Rybakawski (1993) found that depression scores in Zung depression scale were very high in patients with IBS than in controls. Hudson and Pope (1990), evaluated major depression, bulimia, panic disorder, obsessive compulsive syndrome, attention deficit hyper-activity disorder, cataplexia, migraine, and irritable bowel syndrome under the name of 'affective spectrum disorder'. Family studies showed that the prevalence of major affective disorders was higher in the relatives of patients having bulimia, panic disorder and attention deficit hyper-activity disorder compared to normal controls. Investigators suggested that the fact that all disorders placed in this spectrum benefit from appropriate antidepressant treatment make this concept valid (Hudson and Pope 1990). These findings were further corroborated with a recent study of the same group. Authors conclude that affective spectrum disorder aggregates strongly in families, and Major Depressive Disorder displays a significant familial coaggregation with other forms of ASD, taken collectively (Hudson et al. 2003).

### OBJECTIVE

Psychiatric disorders may be comorbid with irritable colon syndrome, a common gastrointestinal disorder, with a rate varying between 54% and 100%. The thought that these two conditions might be placed in a common spectrum is supported by phenomenological, biological and familial similarities between IBS and affective disorders. The objective of this study is, by comparing IBS patients group with control group on various measures, to investigate the prevalence of psychiatric disorders in IBS and to determine whether IBS can be considered within the concept of affective spectrum disorders or not.

### METHOD

A group including 40 patients from Istanbul University Cerrahpasa Medical Faculty Outpatient Clinic of Internal Medicine, who were diagnosed as irritable colon syndrome, was studied and compared to a gastrointestinal control group of 32 patients with inflammatory bowel disease (ulcerative colitis and Crohn's disease) from Gastroenterology Clinics of Cerrahpasa Medical School and Haseki Hospital. Also recruited was a healthy control group comprised of voluntary staff from Bakirkoy Hospital for Psychiatric Disorders who did not report any gastrointestinal symptoms.

### DATA COLLECTION INSTRUMENTS

1) Social-Demographic Data Form: It contains some features that can affect the prevalence of psychiatric disorders, such as age, sex, marital status, the presence of psychosocial stress factors at

the beginning of the disorder and history of alcohol consumption of the subjects.

2) Structured Clinical Interview for DSM-III-R-Non-Patient (SCID-NP): It was used to investigate, in an individual without psychiatric disorder, whether any of the first step diagnosis according to DSM criteria are present at any time (life-long prevalence) and whether the signs of disorder are present in the last month (Sorias et al. 1988).

3) SCL 90-R Symptom Checklist: GSI (general symptom index) value, PSDI (positive symptom distress index) value, and Somatization, Obsessive-compulsive, Interpersonal sensitivity, Depression, Anxiety, Hostility, Fobic Anxiety, Paranoid thinking and Psychotism subscales were evaluated for all patients (Derogatis 1977, Dag 1991).

4) Beck Depression Inventory (BDI): The cut-off point of the scale was admitted as 11. Eleven to 17 points were considered as low level depression, 18 to 29 points were moderate depression, and 30 to 63 points were severe depression (Beck et al. 1961, Tegin 1987).

5) Hamilton Rating Scale for Depression (HDRS): The cut-off point of the scale was admitted as 7. Twenty-five and upper points were considered severe depression, 18 to 24 points were moderate-severe, and 7 to 17 points were moderate depression (Hamilton 1960, Sercan 1987).

6) Beck Anxiety Inventory (BAI): The Beck Anxiety Inventory is a 21 item self-report questionnaire. It is a self-evaluating scale that measures clinical anxiety (Beck 1968). Each item is rated on a 4-point Likert scale ranging from 0=not at all to 3=severely, I could barely stand it. The total score ranges from 0 to 63. It was shown to be valid and reliable in Turkish (Ulusoy 1993).

7) FH-RDC Family Scanning Form: We used 1978 version of family history form (the third and last edition) developed by Endicott, Andreason, and Spitzer. This form was used to investigate psychiatric disorders in relatives of objects in case of direct psychiatric interview was not possible (Andreassen et al. 1986). FH-RDC (Family History - Research and Diagnostic Criteria) is a scanning form proved to be valid and reliable in the researches of family history also in Turkey (Büyükkal 1995).

### STUDY GROUPS

1) The patients constituting irritable colon syndrome group: It included 40 persons followed and treated by CTF outpatient clinics of internal medicine, who submitted the same day and same hours during the time that the study conducted and accepted the interview.

2) The patients with inflammatory bowel disease:

They were 32 persons followed and treated by CTF outpatient clinics of internal medicine, they were selected by random sampling among those accepted the interview.

3) Healthy control group: It included voluntary participants from healthy individuals working at hospital, who has no known psychiatric or internal disease.

The exclusion criteria for both disease groups and healthy controls were as follows:

- 1) Individuals having intellectual incapacity who can not communicate properly
- 2) Dementia and delirium cases
- 3) Those who are treated for a psychiatric disorder except mood disorders
- 4) Those who used steroids within the last month

There were no physical or psychiatric difference between two groups and healthy group regarding age, sex or education.

IBS and IBD had been defined by gastroenterology specialists in internal medicine clinics with history, examination and laboratory investigations, and all patients had been under treatment or under follow-up for one month to 10 years.

## RESULTS

The ages of subjects varied between 16 and 73 years. Average age of subjects was  $36.75 \pm 12.67$  years. Of subjects, 42% were male, 57% were female. Groups were similar in ages. The distribution of age, sex and marital status were similar and is shown in Table 1.

The Beck Depression, Hamilton Depression and Back Anxiety Scale points of patients with IBS were higher than of patients with IBD, and were ( $p < 0.05$   $t = 2.25$ ), ( $p < 0.01$   $t = 2.83$ ) and ( $p < 0.01$   $t = 5.86$ ) respectively; all values were statistically significant. The same values were also higher than control group and the value of  $p < 0.001$  was significant. Table 2 and Figure 1 shows BDS, HRSD and BAS points and ANOVA values of groups.

After SCL 90-R application, in the comparative evaluation of IBS to IBD and control groups regarding the sum of GSI, PSDI and SCL, IBS group showed statistically significant difference compared to IBD and control groups ( $p < 0.0001$ ) (Table 3).

Figure 2 showed SCL 90-R profiles of all three groups. In the evaluation of the three groups, there were no statistically significant difference re-

Table 1. Sociodemographic features of the study and control groups.

	Irritable bowel syndrome (IBS)	Inflammatory bowel disease (IBD)	Healthy control group
Age	$38.10 \pm 13.34$ (16-70)	$38.16 \pm 14.91$ (18-73)	$33.94 \pm 8.88$ (22-54)
Sex	35% Male 65% Female	43.8% Male 56.3% Female	50% male 50% female
Marital status	65% married 25% single 10% widowed	81.2% married 18.8% single 5.9% widowed	4.7% married 9.4% single 3.1% widowed

Table 2. The comparison of groups regarding psychological variables.

	IBS	IBD	Control	ANOVA
Beck Depression Scale	$16.4 \pm 9.2$	$11.2 \pm 10.3$	$5.73 \pm 4.9$	f: 13.52 $p < 0.0001$
Hamilton Rating Scale for Depression	$13.1 \pm 6.7$	$8.2 \pm 7.9$	$2.5 \pm 3.4$	f: 23.21 $p < 0.0001$
Beck Anxiety Scale	$21.3 \pm 10.3$	$8.8 \pm 6.7$	$3.3 \pm 3.9$	f: 49.97 $p < 0.0001$

IBS: Irritable Bowel Syndrome; IBD: Inflammatory Bowel Disease

Table 3. The scores of SCL distress indexes in groups.

	Global Symptom Index (GSI)	Positive Symptom Distress Index (PSDI)	TOTAL SCL
IBS	0.944	1.91	67.97
IBD	0.403	1.32	28.61
Healthy controls	0.338	1.15	30.61

\* $p < 0.00001$

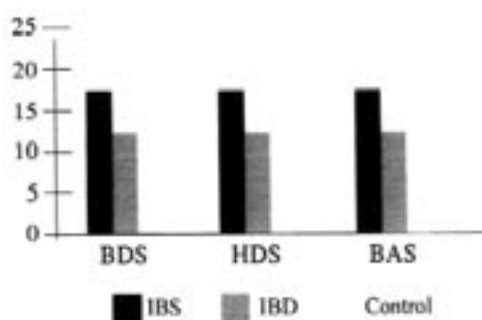


Fig. 1. The comparison of patients with irritable bowel syndrome with inflammatory bowel disease and healthy control group regarding the levels of anxiety and depression. IBS: Irritable Bowel Syndrome; IBD: Inflammatory Bowel Disease; BDS: Beck Depression Scale; HDS: Hamilton Depression Scale; BAS: Beck Anxiety Scale

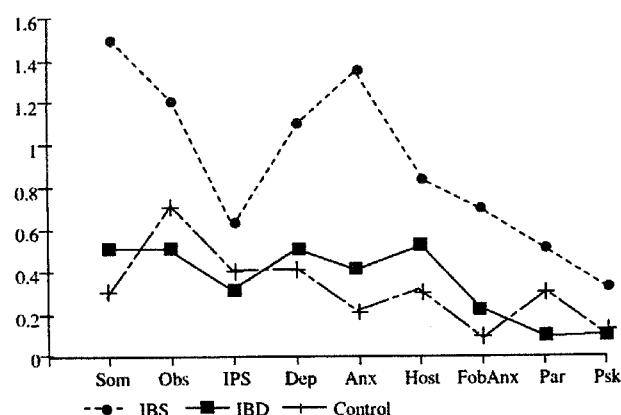


Fig. 2. The distribution of SCL profile by group.

garding psychotism in the patients with IBS compared to comparative and control groups, but there were significant differences in all the other features. IBD group showed significant difference regarding only somatization compared to control group.

After the interview, which made with SCID-NP and adapted to DSM IV, the diagnosis of current major depression was made in 32.5% of IBS group. This rate was 18.8% in IBD group and 0 in control group. For past history of major depression, this rate was 27.5% in IBS group, 9.4% of in IBD group, and 0 in control group. Dysthymia diagnosis was in 10% of IBS patients, 3.1% of IBD patients and 5.9% of control group. Dysthymia and major depression, evaluated together, the frequency of depressive affective disorder was 42.5% in IBS, 21.9% in IBD, and 5.9% in control group.

There was no significant difference between IBS and IBD regarding current depression. There was a statistically significant difference between IBS and IBD regarding past history of depression ( $\chi^2 = 3.72$   $p=0.05$ ). There were significant differences between IBS and IBD regarding existing and pre-existing depression ( $\chi^2 = 19.73$ ,  $p < 0.0001$ ) and regarding lifelong frequency of dysthymia and depression ( $\chi^2 = 27.86$ ,  $p < 0.0001$ ) in favour of IBS. Table 5 summarised the other psychiatric diagnoses.

The existence of any psychiatric disorder was found in 77.5% of IBS, 40.6% of IBD, and 17.5% of control group. The psychiatric disorders in family members defined by FH-RDC interviews of all three groups are as follows.

#### A) The psychiatric disorders identified in mothers

Major depression rate in mothers of IBS group was significantly higher than comparison and con-

Table 4. Associated Affective Disorders.

	Major depression	Previous depression	Dysthymia	Major depression + Dysthymia
IBS	11 (32.5%)	13 (32.5 %)	4 (10 %)	17 (42.5 %)
IBD	6 ( 18.8 %)	3 (9.4 %)	1 (3.1 %)	7 (21.9 %)
Control	-	-	2 (5.9 %)	2 (5.9 %)

Table 5. The distribution of other psychiatric disorders.

	IBS	IBD	Control
Generalized Anxiety Disorder	6 (15 %)	-	1(2.9%)
Panic disorder	4 (10 %)	1(3.1%)	1(2.9%)
Somatization Disorder	2(5 %)	-	1(2.9%)
Specific Phobia	1(2.5 %)	-	-
Tic Disorder	1(2.5 %)	-	-
Conversion Disorder	-	1(3.1%)	-
Social Phobia	-	1(3.1%)	-
Adjustment Disorder with Depressive Mood	-	-	1(2.9%)

Table 6. Psychiatric disorders identified in mothers.

	IBS	IBD	Control
Major Depression	3 (7.5 %)		
Generalized Anxiety Disorder	2 (5 %)		

Table 7. Psychiatric disorders identified in siblings.

	IBS	IBD	Control
Major Depression	5(12.5)	-	-
Bipolar Mood Disorder	1(2.5)	-	1(2.9)
Schizophrenia	1(2.5)	-	-

Table 8. The horizontal and vertical evaluation of the second-degree relatives by group.

	IBS horizontal	vertical	IBD horizontal	vertical	Control horizontal	vertical
Bipolar Mood Disorder	-	1(2.5%)	-	-	-	-
Major Depression	3(7.5%)	-	-	-	-	1(2.9%)
Alcohol and drug abuse	1(2.5%)	1(3.1%)	-	-	-	-
Schizophrenia	-	-	1(3.1%)	-	-	-

trial groups. The existence of psychiatric disorders in mothers were higher in favour of IBS ( $\chi^2 = 5.8$   $p < 0.05$ ); while depression rate was higher than IBD, the difference was not statistically significant (Table 6).

#### B) Psychiatric disorders identified in fathers

Alcohol abuse was found in 2.5% of fathers of IBS group and drug abuse was found in 2.5%, there were no any other diagnosis in the other two groups. One of these fathers was found to have a psychiatric disorder and the difference was not significant.

#### C) Psychiatric disorders identified in siblings

Major depression and schizophrenia were higher in the siblings of patients with IBD than in comparison and control groups ( $p < 0.05$ ), but bipolar affective disorder was higher in control group (Table 7). Horizontal and perpendicular evaluation in second degree relatives of three groups is shown in Table 8.

The presence of psychiatric disorders prior to IBS and IBD were in 83% of IBS group, and 9.3% of IBD group. ( $\chi^2 = 46.53$ ,  $p < 0.0001$ )

While there was IBS history in families of patients with IBS, there were no familial IBD in IBD patients. When we investigated the affective disorders in the first-degree relatives of IBS and IBD patients, we found significant difference in favour of IBS. ( $\chi^2 = 7.19$   $p < 0.01$ ) There were no significant differences in the second-degree relatives. If there were any psychiatric disorders, there was a difference between IBS and IBD in favour of IBS. ( $\chi^2 = 8.99$   $p < 0.01$ )

## DISCUSSION

We found that the prevalence of lifetime prevalence of psychiatric disorders in patients with IBS was higher than in patients with IBD and in control group. Psychiatric disorders was in 77.5% of

IBS patients, 40.6% of IBD patients, and 17.5% of control group. Affective and anxiety disorders were the main psychiatric disorders in IBS group. There was no bipolar affective disorder. We found that 42.5% of IBS patients had depressive disorder, but this rate was not significant compared to comparative and control groups; however, the lifetime prevalence of depressive disorder was significantly higher in the IBS group. When we investigated the presence of psychiatric disorder prior to IBS or IBD diagnosis, we found that there were history of psychiatric disorders (especially affective disorder) in 83% of patients with IBS and the difference between IBS and IBD groups was statistically significant. In the relevant literature, the prevalence of psychiatric disorders in IBS patients varies between 54% and 100%. This rate was reported to be 54% in the study of Ford et al. (1987), 73% in Wender and Kalm (1983), 93% in Walker (1990a), 94% in Lydiard (1993). Wender and Kalm found dysthymia in 27% of patients with IBS and unipolar depression in 23% of them (a total of 50% of patients had affective disorders). Toner et al. (1990) found major depression in 43% of patients with IBS. These rates were similar to our results. Creed and Guthrie (1987) suggested that it had been used invalid and unreliable methods in the majority of studies with IBS patients, and some studies confused psychiatric disorders with personality profiles. Three possibilities may be involved when a psychiatric disorder exists in a patient with IBS: 1- Abdominal and psychiatric symptoms may arise concomitantly, and bowel symptoms may resolve with later treatment. 2- Psychiatric disorder may increase the attention to bowel symptoms, and may facilitate attending to gastroenterology clinics for mild symptoms. 3- If bowel symptoms are new, it may be necessary to investigate an organic reason for chronic neurotic symptoms which are part of the personality (Crasen 2003, Lydiard 2001, Creed and Guthrie, 1987). Walker et al reported (1990a) that the rate of psychiatric

disorder prior to IBS diagnosis was 82%. This rate is similar to our result. Information about families of patients with IBS is not adequate in the literature. Despite there was no genetic study, some studies showed that IBS symptoms were more frequent in some families. This may be due to increased attention of IBS patients to their own bowel symptoms (Walker et al. 1990a). Of patients with IBS, 22.5% were in familial fashion. The prevalence of psychiatric disorder in first degree relatives of IBS patients was significantly higher than the control group, but this case was not true for second degree relatives. Available data is not enough to explain whether this disorder is a known situation or a hereditary disorder. Studies showed that familial history method identified psychiatric disorder in a lower rate than the real value. However; since control subjects were applied the same method, we could expect that this limitation did not constitute a difference (Andreasen et al. 1986). We obtained information about first- and second-degree relatives in conjunction with FH-RDC form.

The other feature of the study that might be the subject of criticism was that the investigator being unblind to the diagnoses of the subjects. However, the fact that psychiatric diagnosis was made by SCID (a form structured according to patients, comparative group and control group) eliminates this objection. We need to say that the same objection is also valid for HRSD and FH-RDC and the scales we used in this study did not contain a structured interview. Mothers and siblings of IBS patients had psychiatric disorders significantly more than healthy and patient control group. Although depressive disorders were the most common diagnostic categories, there was no statistically significant difference among family members of IBS and IBD patients. Blanchard et al. (1990) found positive psychiatric family history in 55.7% of patients with IBS, in 53.5% of patients with IBD and in 47.2% of control group, and there were no significant differences. These results was different from ours: we found that psychiatric disorders in first degree relatives of IBS were higher than of healthy control and gastrointestinal comparison groups, but there were no significant differences in second degree relatives.

Investigating psychiatric symptoms in the SCL subscales, IBS group showed significant differences than the other two groups except the psychoticism. We found that GSI, PSDI and SCL total scores were significantly higher in the IBS group. These results were similar to those of Walker's (1990a). Although psychiatric diagnosis was not made clinically, these high scores lead us to think the patients maintained their intense subclinical psychiatric symptoms in between major depressive episodes. Walker et al. (1990b) suggested that IBS patients might exaggerate their small physiological senses and might be very sensitive to small physical symptoms. We found that the BDS, HDS and BAS scores were significantly higher in IBS patients, although Walker et al. (1990b) did not

find any significant differences. Considering that together with other psychiatric signs, IBS responds various antidepressant treatments and antidepressant use in the treatment of IBS in literature (Alevizos et al. 1980, Maxton et al. 1991, Schrivastava and Siegel 1991), it is possible to evaluate IBS in depressive spectrum. But, the fact that there were more patients diagnosed as having depression in IBS group than in other groups in our study could explain that IBS group had higher points from depression scales. Considering this point of view, it could be suggested that IBS is a condition which showed co-morbidity with depression rather than being a depressive spectrum disorder. Therefore, it was necessary in our study to determine whether the scores in the depression scales of patients with IBS not having depression diagnosis were higher, compared to other groups or not. The fact that depression is frequent in IBS may lead a speculation, as some authors pointed, that this may be due to the fact that depressive patients with IBS could consult for health care more readily than those patients of IBS without depression. The published literature indicates that fewer than half of individuals with IBS seek treatment for it. Of those who do, 50% to 90% have psychiatric disorders, including panic disorder, generalized anxiety disorder, social phobia, posttraumatic stress disorder, and major depression, while those who do not seek treatment tend to be psychologically normal (Lydiard 2001). It is reported that patients with underlying psychological disorders are more likely to seek medical care for their irritable bowel symptoms, and those with depressive or anxiety disorders tend to rate their physical symptoms as more severe (Jackson et al 2000). In a study by Herschbach et al (1999) individuals with functional gastrointestinal disorders who consulted a physician for their gastrointestinal disorders and those who did not differed significantly, especially on psychological measures. The differences between these individuals and the general population were greater for the consultants than for the nonconsulters.

Co-morbidity of IBS and major depression may reflect these antecedent factors rather than a more simple interaction between IBS and mood. Further, if interactions between mood and IBS do exist, there is likely to be considerable heterogeneity within the patient population, and the absence of a time-lagged association between mood and symptoms would not be incompatible with some such interactions (Crane et al. 2003).

## CONCLUSION AND SUGGESTION

The patients with IBS present to physicians and gastroenterologists rather than psychiatrists. Undiagnosed and untreated psychiatric disorders lead to impairment of quality of life and increased morbidity of IBS (Lydiard et al. 1993, Lea and Worwell 2001). Although all patients with IBS are not co-morbid with psychiatric disorders, it is obvious that psychiatric interview will be useful in

clinic follow-up of these patients. So, making proper diagnosis and contributing to treatment by psychiatrist may assist to develop a treatment approach including psychotherapeutic and psychopharmacological approaches in the treatment of coexisting depression and in changing illness behaviour that may make adaptation hard.

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